HOOKER'S
LONDON
JOURNAL
OF
BOTANY.

VOL. VII.

SHOUT
SHARE
IT

QK1
.L598
1848
v.7

THE
LONDON
JOURNAL OF BOTANY;

CONTAINING

FIGURES AND DESCRIPTIONS

OF

SUCH PLANTS AS RECOMMEND THEMSELVES BY THEIR
NOVELTY, RARITY, HISTORY, OR USES;

TOGETHER WITH

BOTANICAL NOTICES AND INFORMATION,

AND

OCCASIONAL MEMOIRS OF EMINENT BOTANISTS;

BY

SIR W. J. HOOKER, K.H., D.C.L., F.R.A., L.S.

VICE-PRESIDENT OF ~~THE LINNÆAN SOCIETY~~; HONORARY MEMBER OF THE ROYAL IRISH ACADEMY; MEMBER OF THE IMPERIAL ACADEMY CÆSAR-LEOPOLD. NATURÆ CURIOSORUM; OF THE IMPERIAL SOCIETY CÆSAR. NATURÆ CURIOSORUM OF MOSCOW; OF THE ROYAL ACADEMIES OF SWEDEN, PRUSSIA, LUND; OF THE ACADEMIES OF PHILADELPHIA, NEW YORK, BOSTON; OF THE NAT. HIST. SOCIETY OF MONTREAL, &c., &c.
AND DIRECTOR OF THE ROYAL GARDENS OF KEW.

VOL. VII.

WITH TWENTY-THREE PLATES.

LONDON:
PRINTED AND PUBLISHED BY
REEVE, BENHAM, AND REEVE, KING WILLIAM STREET, STRAND.

1848.

NULLA DIES SINE LINEA.

REEVE, BENHAM, AND REEVE,
PRINTERS AND PUBLISHERS OF SCIENTIFIC WORKS,
KING WILLIAM STREET, STRAND.

THE

LONDON JOURNAL OF BOTANY;

EDITED BY

SIR W. J. HOOKER, K.H., L.L.D., F.R.S., & F.L.S.

On the structure of Cruciferous Flowers; by A. Moquin-Tandon, *and* P. Barker Webb.

The Cruciferous Order, one of the most numerous and important in the Vegetable Kingdom, has attracted the attention of many distinguished botanists, who, at various times, have studied the peculiar structure of its inflorescence. The most contradictory opinions on the symmetry of its organs, and on the original type to which they should be referred, have been the result. Owing to this disparity of opinion among botanists, and notwithstanding their labours, much yet remains to be said on this interesting subject. Our intention is to recapitulate the theories, true or false, of the authors who have preceded us, and having shown the value of the former, and combated the latter, we shall add our own observations, and deduce from both a new explanation of several important parts of the flower.

Calyx.

The Calyx is composed of four folioles; two lateral, alternating with the axis,* and two cutting it at right angles, one of which is interior, or opposed to the axis, the other exterior.* The two lateral folioles are inserted a little lower than the interior and exterior, (*foliola paullo demissius inserta,* Endlich). We shall explain hereafter the cause of this difference. It is sufficient, at present, to say, that in several species this difference is almost null, and that botanists in their descriptions have always considered these four folioles as forming part of a single whorl. We conclude, then, that the first verticillum in the Cruciferæ presents the *quaternary type*.

---

* Sépales monostémones ou valvaires.—DC.

The two lateral folioles are often a little broader than the others: they present, sometimes, at their base, a slight dilatation, a kind of gibbosity (*Hesperis, Matthiola*), or even a sort of spur (*Iondraba sulphurea,* Med.). Notwithstanding this, all writers have described the calyx as a regular verticil.

M. Krause, in some lately published remarks,† affirms that the anterior and posterior leaflets, instead of being placed a little lower than the two lateral ones, are, in reality, a little higher, and that in point of time, they are produced before them in the bud. He imagines that the former of these is a bract, and the latter a bracteole.

M. Duchartre is of a different opinion.‡ According to him the anterior and posterior leaflets are certainly developed first. We have ourselves ascertained this precedence, and we have seen, likewise, that their insertion is a little lower than that of the two others. As to the names bract and bracteole, given to these organs by M. Krause, it will be sufficient to say, that it is not possible that there should be a bracteole between a flower and the axis of inflorescence.

COROLLA.

The corolla is formed of four petals, longer, usually, than the calyx, with the folioles of which they alternate.

This verticil is almost always regular.‖ Some Cruciferæ, however, whose inflorescence is corymbiform (*Iberis umbellata*, L.), have their two exterior petals enlarged like those of several Umbelliferæ. The same cause, that is to say, the compression proceeding from the axis, in both cases has effected this. It is likewise a remarkable fact, and not before noticed, that the foliole of the calyx which alternates with these two petals, and which is, therefore, itself likewise the furthest removed from the axis, is also constantly longer than the others. This may be easily seen in the flowers of *Iberis umbellata*, and *I. pinnata.*

---

* Sépales distémones ou placentaires. DC.

† Einige Bemerk. ueber Blum. der Fumar. und Crucif. in Flor. od. Bot. Zeit. 1846, No. 8 et 9.

‡ Revue Bot. 1846, vol. i. p. 208.

‖ The structure of the flower in Cruciferæ is *so regular* that it has been generally remarked by all observers.—*DC. Mém. sur les Crucifères,* 1821, p. 7.

ANDRŒCEUM.

The andrœceum consists generally of six stamens, four long and two short (*Tetradynamia*). The long stamens are inserted side by side, and a little higher than the single ones. The stamens alternate exactly with the petals, but in this alternation, the twin stamens, if we may so term them, are so disposed, that each pair fills the space which one only of these organs ought to occupy.*

The illustrious De Candolle at once perceived that the hexandrous disposition of the andrœceum was not contrary to the symmetrical arrangement of the flower, since a stamen, or a pair of stamens was found opposed to each foliole of the calyx, and that consequently the andrœceum and the corolla alternated in reality with each other. Unfortunately the plan which accompanies his Memoir is not rigorously exact.† Each of the double stamens is opposed in part to a petal, and they are separated from each other. This is, doubtless, an error of the artist, for the author says, positively, page 19, and again, page 20, that these stamens are *très rapprochées.*

M. Lestiboudois,‡ and M. Kunth,‖ in their memoirs on the Cruciferæ, have given as their opinions, that instead of being geminate and simultaneously alternate with the petals, the longer

---

[*] This is well shown in the beautiful drawing of *Raphanus sativus*. Plée, *Types de chaque fam., Crucif.* f. 1.

[†] *Mém. sur les Cruc.* 1821, *pl.* I., *fig.* 6.

[‡] Obs. phytol. sur l'inser. des étam. des Crucif. 1826, p. 6.

[‖] Zwei bot. Abhandl. 1833, t. 2, f. 3.

stamens were distant from each other, and opposed to the elements of the corolla.

This hypothesis has again been brought forward by our friend M. Gay, in his interesting Memoir on the construction of the flower in the Fumariaceæ.*

Dr. Lindley states, like ourselves, that *two* stamens *stand opposite each of the anterior and posterior sepals, and one opposite each of the lateral sepals*;† but, having imbibed the same opinion as the three botanists above named, in the accompanying diagram‡ he has figured the double stamens too much apart: they should, in reality, touch each other.

The structure of the andrœceum of some of the species of *Gynandropsis* will aid us in explaining that of the Cruciferæ. The great affinity that exists between them and the Capparideæ is well known. In the *Gynandropsis* the extremely developed receptacle is elongated into a sort of foot-stalk (*gynophorum*), terminated by the ovarium, and bears the andrœceum upon a swollen portion at its base. The stamens on falling, leave on this portion of the foot-stalk small scars, more or less visible, whose relative position it is generally easy to determine. M. A. de St. Hilaire, and one of us, have remarked that in several species two of these scars were isolated; whilst the four others, placed higher, were associated two and two, and that the two pairs alternated with the single stamens. Comparing the respective positions of the Andrœceum and the Corolla, they found that the single stamens alternated with two petals, and each pair of geminate stamens with two others. This arrangement is identical with that of the Cruciferæ.

Several modern botanists have sought to explain, whence it happens that the andrœceum of the Cruciferæ has deviated in this manner from the type of the calyx and corolla.

M. A. de St. Hilaire observed at Orleans, and M. Delile in the Paris garden, plants of *Cardamine hirsuta*, L., in which the flowers were tetrandrous and ternate: other botanists, when this curious monstrosity became known, inquired whether such might not be the real primitive type of the order, and whether in the usual state of these plants there might not exist a constant abortion of the whole of the two lateral flowers, excepting one stamen. This explanation is inadmissible, if not absurd, and has been successfully combated by M. Lestiboudois. In the Teratology of our own species, it might as safely be asserted, when a six-fingered child is produced, that three embryonary ova had met together, and that two of the fœtuses, save one finger of each, had disappeared by abortion.

---

* Ann. sc. nat. 2, sér. vol. xviii. 1842, p. 218.

† Veg. Kingd. 1847, p. 351.

‡ Ibid. p. 352.

De Candolle, himself, has shown in his Memoir on Cruciferæ, that each pair of geminate stamens has really only the value of a single organ, and consequently that the andrœceum in Cruciferæ may, like the corolla and calyx, be reduced to the quaternary type.

The filaments in this order are usually thin, and widened by compression, like ribands: those of the longer stamens occupy, therefore, much more space than a regular alternation requires. Their bases extend right and left, at times so far as even to place themselves in front of the *margins* of the petals. It is this, probably, which led several botanists, (as we have seen,) to imagine that the longer stamens were opposed to the elements of the corolla. If, however, we consider the two to be in reality but one, we shall find that their point of separation, which represents the middle of the primitive organ, is opposite to no part of the corolla, but invariably alternate with it. This is still more apparent in the flowers of *Sterigma tomentosum*, and *Anchonium Billardieri*, in which these stamens remain undivided below, and the common filament is in strict alternation with the petals.

One of us, long since, adopted this opinion, in his Essay on the reduplication of Organs,* a work in which he called the attention of botanists to the numerical increase of organs, and showed its importance in organography, teratology, and taxonomy.

De Candolle had clearly indicated this phenomenon in his Memoir cited above, since he compares the double stamens to the petals of those plants which, when cultivated, have a tendence to fasciculation, adding *chacune d'elles se dédouble pour en former deux.*[*] It is probable, however, that the celebrated professor of Geneva considered this a merely organic multiplication, since in the lines which immediately follow, speaking of several plants where this "*dédoublement*" has taken place only in a portion of the stamen, he looks upon it as the result of two stamens *plus ou moins soudées ensemble inférieurement.*

---

* Essai sur les dédoublements, Montpell. 1826. in 4to.—Elem. de Térat. végét. 1841, p. 337.

This theory of the *dédoublement* of the two longer stamens in this group is confirmed by numerous facts, both normal and anomalous. 1. In many Cruciferæ and more particularly in the *Clypeola cyclodontea,* Del. the filaments of the solitary stamen are furnished with two teeth, one on each side, whilst those of the double stamens have but one on their outer side; if we join these two stamens together so that they form but one, a bidentate filament will result entirely similar to those of the solitary stamens.[†]

2. In other Cruciferæ a longer or shorter portion of the filament remains simple. Thus, in the *Sterigma tomentosum,* D.C.,[‡] the division takes place as far as the middle; in the *Anchonium Billardieri,* D.C.,[||] in a third part only of the upper portion of the filament. Here the position of the longer stamens, double only in their upper portion, is exactly the same as that of the solitary stamens.

3. In the *Vella pseudocytisus* Linn., we find in the place of the double stamens, a single one: its filament being frequently rather broader, sometimes divided only at its summit, sometimes entirely undivided, but bearing in that case an anther, wholly, or partially geminate.

4. Many Cruciferæ become tetrandrous by pelorization, others are normally so.[§] In either case the four stamens are then equal.

---

[*] Mém. sur les Crucif. 1821.

[†] See the note at the end of M. Delile's memoir on the *C. cyclodontea* (*Bull. de la Soc. d'agr. de l'Hérault*). See likewise C. A. *Mong. Das Alyss. minutum, tab.* 1, 1 F (*A. minutum,*) *tab.* 2 E (*A. Smyrnæum,*) *tab.* 2, 1 F (*A. minimum,*) and 3 E (*A. fulvescens.*)

[‡] *Mém. Crucif. tab.* 1, *fig.* 25.

[||] *Ibid. tab.* 1, *fig.* 26.

[§] M. Delile has remarked that the *Draba muralis* Lin. in its wild state about Montpellier has constantly only four stamens.

5. Finally, certain Cruciferæ, instead of returning to the quaternary type, recede from it. Their single stamens undergo a change analogous or very similar to that of the double pair. One of us has observed flowers of *Matthiola incana,* in which the single stamens were cleft throughout their entire length, each portion being provided with half an anther and half a filament.* M. Lestiboudois speaks of a *Cheiranthus Cheiri* in which these stamens were completely geminated, not laterally as the longer pair, but from without inwards.† M. Seringe met with a flower of the same species (*var. grandiflora*) which had the lower stamens "*dédoublées exactement comme les supérieures.*"‡

It has been objected to this theory, as applied to the andrœceum of the Cruciferæ, that if the double stamens owed their origin to this kind of gemination or multiplication, they ought to have each a single, and not a double anther.

This objection is easily refuted. There are two kinds of *multiplication* or *dédoublement.* In the first the organ separates itself into two or several parts, the half, the third, or the quarter of the original: in the second this same division takes place, but accompanied with the reproduction of new parts, so that the original organ is represented by several organs which more or less resemble it. The first is a commencement of *multiplication,* the second is what is properly called *multiplication.*‖ Thus in the family of the *Polygaleæ* we find the *Krameria* provided with four bilocular anthers, having a terminal dehiscence;§ whilst the true Polygalas have eight stamens with unilocular anthers opening likewise at their summit: these eight half stamens are arranged two and two together, and each pair evidently occupies the place of one of the bilocular stamens of *Krameria.*¶ In this case the organ is cleft longitudinally, but the *multiplication* is imperfect. If, however, we examine the genus *Phytolacca* or *Hypericum*; in both we meet with fascicles or *phalanxes* of stamens in the place where one only ought to be found. All these stamens have bilocular anthers, the same as the single ones of the neighbouring genera where no multiplication takes place.

---

* *Elém. de Térat. Vég.* p. 297.

† *Sur l' insert des étamines des Crucifères,* p. 6.

‡ *Bull. bot.* 1830, p. 112.

‖ *Elém. de Terat. végét.* p. 338.

§ The fifth stamen is represented by a gland.

¶ The fifth pair is represented by a gland, as in *Krameria.*

In the Cruciferæ the multiplication is of the simplest kind; the single organ is not represented by a group or adelphia, but is simply geminated, and this in the half only of the andrœceum.

Another difficulty has been alleged against this explanation; it is said that the geminated stamens should be less than the single. Those who bring forward this objection forget that the multiplication of organs is always caused by excess of nutriment; and this excess of nutriment is as capable of augmenting the volume of an organ as of multiplying it.* It is well known that in double flowers, in which this multiplication is so frequently repeated and so evident, the organs themselves are at the same time equally as much increased in volume.†

A third objection to which we must reply has been advanced. The stamens it is said are inserted in the receptacle at different heights. We may remark, firstly, that if these organs belong to two distinct verticils, as has been hence inferred,‡ the upper series ought to be opposed to two or four petals. We have seen above, on the contrary, that as well as the single stamens they alternate with them and complete thus a normal quaternary alternation. No botanist has ever imagined that the *Cruciferæ* were provided with a double calyx, though the leaflets are usually so disposed that two are situated a little below the others. We shall see hereafter that the same cause which displaced the single stamens has also occasioned this depression.

The leaflets of the calyx in *Polygaleæ* are placed likewise at different heights,‖ but on account of the regular alternating of these organs with the elements of the corolla they have always been looked upon as constituting a single calyx.[*] This is exactly the case in the andrœceum of the Cruciferæ. We shall see too shortly whence this inequality of height proceeds. It is sufficient for our present purpose to say that in numerous cases it is almost null, and in others it does not exist at all, particularly in the species that are normally or accidentally tetrandrous.

---

* *Elém. de Terat. végét.* p. 341.

† See *Lestib. sur l'insert. des étam. des Crucif.* 1826, p. 5. *Kuntz zwei Abh.* 1833. *Lindl. Nat. Syst.* 1836, p. 58, *and Veg. Kingd.* 1847, p. 351, *Gay, Ann. sc. nat. 2ième. sér. vol.* xviii., 1842, p. 218.

‡ In all monstrous cruciferous flowers, which we have seen, where there were two series of stamens, the supplementary rank was produced by the multiplication or transformation either of the stamens, pistils, or petals. See *Elém. de Térat. Végét.* p. 360 and 19.

‖ *St. Hil. and Moq. sur les Polyg. Mém. du Mus. vol.* xvii., 1828, p. 323 and 356.

It would appear that the remarks of M. Krause on the embryogeny of this family[†] are at variance with the explanation given above. According to this observer, the four geminate stamens first appear in the bud under the form of four little *papillæ placed before the petals.* The researches of M. Duchartre seem to confirm this observation.

We have ourselves opened several young buds of *Sinapidendron Bourgeaei,* and in this species at least we find that the excrescences which are to form the petals, are placed by no means opposite the middle of the young filaments, which would constitute a real opposition, but obliquely and opposite their margin. The younger the buds we opened, the nearer was the approach, not to a real opposition, but on the contrary to an alternation. Moreover, we had the good fortune to meet with a bud in which the andrœceum had returned to the quaternary type. In this case the alternation was complete, and as if to confirm our opinion of the reality of this alternation when the stamens are double, there was a slight cleft in the middle of one of the nascent filaments, indicative of the gemination which usually takes place.

THE DISK AND GLANDS.

The receptacle of the Cruciferæ is enlarged more or less in different species, and forms a sort of glanduliferous disk, (*Epipode,* Richard,) usually of a deep green, of a fleshy consistence, and often very apparent.

The glands, exserted upon this disk, have either been neglected or little understood by the greater number of botanists. Let us consider what probably may be their use and origin.

---

[*] In the genus *Krameria* the folioles of the calyx are triscriate.

[†] *Einige Bemerk. ueber Blum. der Fumar. und Crucif. Flora od bot. Zeit.*

We may lay it down as a general rule that there can exist but two sorts of glandular bodies in the flower. Glands result either from the abortion or atrophy of certain organs, or they are *sui generis*. These latter form an integral part of the verticillate organs of the flower, or else they are dilatations of the receptacle appertaining more or less to the insertion of the stamens.

For example, the three glandular processes of several *Hyperica*, (*Triadenia*, Spach) manifestly occupy the place of staminal organs greatly modified through want of nourishment.

On the other hand the filaments in *Laurus nobilis* by no means represent abortive organs.* The same may be said of the dorsal protuberances of the calycine leaves of the *Malpighiæ*, and of the nectariferous swellings in the flowers of various *Liliaceæ*.† This rule being established, let us see to which of these classes the glandular bodies of the Cruciferæ belong.

These organs are two, four, six or eight, in number.

In the *Cheiranthus Cheiri* we find only two glands‡, correctly described by M. Lestiboudois.|| These glands form two excrescences, from the middle of which the two solitary stamens rise. They have the appearance of fleshy rings somewhat irregular above where they are slightly quadridentate. These excrescences cannot be considered abortive organs, for if they represented stamens placed either above or below, they would be opposed to the solitary stamens. Nor can we suppose them to form an integral part of the stamens whose filaments they embrace, for the stamen is articulated with them. We are obliged therefore necessarily to consider them as glandular processes destined to support the male organ of the flower.

---

* These glands frequently become stamens, and in that case three stamens are found in the place where there should be but one. (*Moq. Ess. sur les déd*)

† See likewise the double glands placed at the base of the three exterior folioles of the *Polygala oxyphylla*, D.C. *Deless. Ic. select.* 3, *vol.* 17, *fig.* 3.

‡ *Phyt. Can. sect.* 1 *vol.* 8, A 2, *fig.* 6.

|| *Sur l'insert. des étam. des Crucif.* p. 4.

In the *Matthiola incana** the annular ring in question has two slight lobes above, and is more developed on that side than below: the gland forces down the stamen, and with it the foliole of the calyx which is beneath (*De Candolle*). This then is the true cause to which we alluded of the depression of the single stamen and of the lateral leaflets of the calyx.

A similar organization is met with more or less in the greater part of the Cruciferæ. When quite young the glandular ring of *Matthiola incana* is equally developed both above and below, as is apparent in the excellent figure of Professor Kunth:† it is only in a more advanced age that the inequality takes place.

In the *Diplotaxis muralis* the ring is interrupted and reduced to a large single gland scarcely lobed, and placed above the insertion of the filament.‡ Even this modification is sufficient to determine a change in the position of the stamen.

In the *Aubrietia deltoidea,* the glandular ring is likewise interrupted but inversely. The gland is shaped like a horse-shoe, the hollow side of which is turned upwards.‖ It is remarkable that in this plant the inequality of insertion is little perceptible.

In *Koniga* or *Octadenia,* instead of a glandular ring we find two glands placed on either side of the filament. These glands have very little influence on the insertion of the simple stamens, which is nearly on the same level with that of the double.

It will be easily seen that such glands as these, sometimes annular, sometimes above, sometimes below the stamen, can represent no particular organ. Even if we admitted a triple andrœceum as possible in this family, it would not explain such an organization.

We now come to the double stamens. These are never implanted on a gland (*Lestiboudois.*) They are often not even accompanied by a gland at their base; an absence easily accounted for by the gemination itself of the stamens. At the same time that excess of nutrition has acted upon these organs, the receptacle on which they are placed has been operated upon inversely, and its development stopped. There are, however, some examples where multiplication of organs takes place without the absorption or disappearance of glands. In a flower of *Cheiranthus Cheiri* which had become octandrous, observed by M. Seringe,* of which we have already spoken, though the inferior stamens were geminated, the glands that subtended them were of their usual size.

---

* See also *Cheiranthus* (*Dichroanthus*) *mutabilis. Phyt. Can. sect.* 1, *vol.* 8, *tab.* 1, *fig.* 3.

† M. Lestiboudois speaks of this position of the gland in this plant, and in the *Brassica campestris,* and he rightly considers it the commonest. See too *Raphanus sativus.* Plée, *Types des fam. Crucif. fig.* 1.

‡ In some species the gland is enlarged downwards, and fills the hollow at the base of the foliole (Lestiboudois). In this case the foliole has frequently a protraction at its base shaped like a spur. (*De Candolle.*)

‖ De Candolle, *Phyt. Can. tab.* 1, *fig.* 3.

In *Diplotaxis muralis,* immediately below the double stamens, there is a small narrow gland which may be considered as the rudiment of the glandular ring. A similar gland occurs in the *Brassicæ,* and *Sisymbria* (*Lestiboudois.*)† In *Koniga* there are two, perfectly distinct, placed side by side. This is a still nearer approach to the glandular ring.

It is remarkable that in *Matthiola* and *Cheiranthus,* where there is no trace of glands, the double stamens are considerably longer than the others: in *Diplotaxis* they are but little longer, and in *Koniga* all are nearly equal in length.

In the *Draba muralis* where no gemination has taken place, and where the glands, almost equal, form a sort of circular disk, the stamens are equal in height and form a regular verticil.

GYNŒCEUM.

To explain the nature of the fruit in Cruciferæ, De Candolle imagined the siliquelle or carpidium "à trois pièces, deux latérales portant des ovules sur leur disque intèrieur; et une extèrieure ne portant point d'ovules."‡

The fruit of Cruciferæ he supposed to be made up of two of these siliquelles united together. This curious but very inadmissible theory explained perfectly the apparent opposition of the stigmata to the placentæ.

---

* *Bull. bot.* 1830, *p.* 113.

† Plée. *Types des fam. Crucif.*

‡ *Théorie élem. 2ième éd. p.* 133.

Mr. Brown, in 1817, in his celebrated Essay on the Compositæ, comparing the fruit of that order with those of Cruciferæ, considers these latter to be made up of two united carpidia; but he does not allude to the position of their placentæ with regard to the stigmata, the great stumbling-block in this Order. De Candolle, in his Systema* and in his Prodromus,† adopted the same formulary, and with the same reserve.

M. Lestiboudois, in his Memoir,‡ combats the opinion of De Candolle, given in his Théorie Elémentaire. Although we consider his system as to compound fruits to be altogether erroneous, nevertheless he has perfectly explained the nature and origin of the dissepiment. "Les prolongements intèrieurs," he says, "ne sont que des saillies du bord trophospermique." ||

Mr. Brown shortly afterwards expressed the same opinion: "The dissepiment in this family is nevertheless formed of two lamellæ, derived from the parietes of the fruit." §

The examination of the structure of the fruit in *Escholtzia Californica* induced Dr. Lindley to create an entirely new theory to explain the position of the stigmata and placentæ in Cruciferæ.¶ He imagines that the intervals which separate the two placentæ form each an ovarian leaf, reduced to its smallest dimensions and surmounted by its stigma; whereas the two greater valves represent two other ovarian leaves exceedingly developed, whose stigmata and placentæ are abortive. This very ingenious theory, which, though not true, presents a most seductive appearance of reality, has been generally accepted.

Professor Kunth** admitted, and illustrated it with figures, adding a peculiar opinion of his own as to the nature of the dissepi-

---

* *Vol.* ii., *p.* 140.

† *Vol.* i. *p.* 131.

‡ *Sur les fruits siliq. p.* 5.

|| *p.* 15.

§ *App. Oudn.* 1826, *p.* 12.

¶ *Bot. Reg. vol.* xiv., 1828, *fol.* 1168.

** *Zwei Bot. Abhandl.* 1833, *p.* 7.

ment. This opinion by no means agrees with the observations on Embryogeny, published by M. Trécul.*

Having explained the opinions of those who have gone before us on the female organ, we shall proceed to develop our own.

The ovarian leaf (*phyllidium* Phyt. Can.) and its result, the *carpidium,* in the Cruciferous Order, differ really in appearance only from that of other polycarpidian plants. Both reasoning and analogy have brought us to this conclusion; and its truth is fully confirmed by several monstrous flowers, published by different authors.

As in other Phyllidia, the ovuliferous nerves or placentæ are carried along the border of the leaf, and are modifications in fact of its lateral nerves. At their summit they form a dicephalous stigma, whose two heads are separated by the depression resulting from the non-development of the middle nerve of the leaf. The two or more Phyllidia which compose the ovarium are exactly united by means of their placentæ together with their stigmata; and the apparent stigma derived from their union is divided by the common canal result of the depressions of both ovarian leaves confounded together. The lateral lobes of each opposite phyllidium being thus brought together and forming an apparent whole, botanists supposed they had before them two stigmata in this order opposed to the placentæ, which was contrary to all analogy.

When the fruit is ripe, the placentæ and stigmata of the two united carpidia persist attached together, as well as the double spurious dissepiment,† which they have projected to the middle of the fruit, or in those called *fenestrati* to within a short distance of the axis, whilst the laminæ of the leaves, transformed into valves, fall off.‡ A similar dehiscence is seen in the *Papaveraceæ* and several of the *Capparideæ.*

---

* *Ann. des Sc. Nat. 2ième Sér. vol.* 20, 1843, *p.* 339.

† M. Trécul has shown that the dissepiment, originally simple, becomes double by the rupture lengthwise of the lax and elongated tissue of the interior cells.

‡ In the *Parolinia ornata,* described by one of us, the summit of the carpidia is protruded in the form of two narrow horns almost parallel, bifurcated at their extremity, much longer than the styles, but so like styles, that Dr. Lindley, in his elaborate work (Veg. Kingd. p. 352) has mistaken them for these. They are mere pro-

In the genus *Tetracellion,* Turczan. where the capsule has assumed the normal tetramerous type, the fruit is nearly that of a poppy, the chief difference consisting in the spurious dissepiments which in this curious genus do not reach the axis. The dehiscence of *Tetracellion* is precisely the same as that of the *Argemone Mexicana.* The stigma is depressed in the middle, and it is not difficult to detach the ovarian leaves, so that each is surmounted by the portion of the collective stigma which belongs to it.* Another analogy fully confirms our opinion. On examining the gynœceum of *Eschoetzia Californica,* which has four stigmata, we find that each pair surmounts an ovarian leaf; if we imagine each separate stigma of each pair to be united with its neighbour of the opposite pair, we obtain the two spurious stigmata of the greater part of *Cruciferæ.*

If we call Teratology to our aid, we shall find that in all cases, where through monstrosity the pistil becomes foliaceous, the ovules are placed at the margin of the leaf; and, if the stigma is formed, it is dicephalous and placed at the summit.†

The normal fruit of the Cruciferæ is therefore composed of four carpidia disposed crossways: the placentæ and the stigmata of each are united, and they are divided from each other more or less by spurious dissepiments: each of them opens when ripe by a valve which separates itself marginally and longitudinally from the placentæ, which, together with the dissepiment and surmounted by the stigma, persist in the greater number of species: two of the carpidia are constantly abortive.

---

longations of the valves whereof they form part, and with which they fall off when the fruit is ripe, leaving the true stigmata attached to the placentæ.

* One of us has found flowers of *Iberis* with 4 folioles to the calyx, 4 petals, 4 stamens, and 3 or 4 carpels, forming a real pelorium. Professors Seringe and Alph. de Candolle have met with 4 carpels, the first in *Diplotaxis tenuifolia,* the second in *Lepidium sativum* and *Cheiranthus Cheiri.—Monstr. Vég. p.* 13 *and* 14, t. 5. *fig.* 8 *and following.*

† See *Engelmann de Antholyz. t.* 4, *fig.* 4, 5, 16, *and* 17.—*Presl, in Linnæa, vol. p.* 599 *t.* 9.—*Alph. D. C. Monstr. Vég. t.* 5, *f.* 8.

Conclusion.

If we recapitulate what has preceded, we shall arrive at the following conclusion.

The floral type of Cruciferæ is quaternary. The *calyx* is composed of 4 leaflets, the *corolla* of 4 *petals,* the *receptacle* has 4 staminiferous glands, the *andrœceum* 4 stamens, the *gynœceum* 4 pistils, and the *fruit* 4 carpidia.

These verticils alternate regularly. Two stamens in the habitual state of the flower have been transformed into two pair by multiplication (*dédoublement*), and two pistils have disappeared by abortion : hence the andrœceum has two component parts more than it should have ; the gynœceum two less.

The four staminiferous glands are more or less irregular or incomplete, and are found above, below, or by the side of the filaments. Their volume has caused a change in the position of two stamens and of two calycinal leaves, which makes the andrœceum and the calyx appear biverticillate.*

---

* Since the above was written and prepared for the press, our attention has been called to a note of Mr. Brown, appended to his observations on *Loxonia acuminata Pl. Jav.* 2, *p.* 106, in which he shows that each carpidium in a compound and unilocular ovarium has necessarily two stigmata (we have called this a bicephalous stigma,) and that the lobes, or as he has named them, stigmata of the same carpidium are usually confluent.

"This rule," he adds, "admits of exceptions, as in *Parnassia,* in many *Cruciferæ,* and in *Papaveraceæ* : in all these cases the stigmata as well as placentæ of the adjoining carpels are confluent."

From this passage we are persuaded that Mr. Brown is of the same opinion with ourselves, and had the occasion allowed him to develop his ideas on the phyllidium or ovarian leaf of this order, they would have been found not very different from those we have attempted to explain above. The portion, however, of our Memoir which treats of the gynæceum is not the less necessary ; for others have not interpreted the ideas of this profound observer in the same manner.

Mr. Griffith (*Trans. of Linn. Soc. vol.* xix., 1845, *p.* 328) after citing the above passage, seems to suppose that in some genera at least the normal fruit of Cruciferæ is composed of four carpidia, two anterior and posterior "subsequently much the smallest," whose stigmata are confluent, forming therefore what we have termed the apparent stigma, and two lateral, distinct themselves as to their valves, but having their stigmata confluent with, and lost in, the apparent stigmata.

This opinion, he adds, is independent of that of Professor Lindley. It appears to

Contributions to the Botany of SOUTH AMERICA; *by* JOHN MIERS, ESQ., F.R.S., F.L.S., &c.; *continued from* Vol. v. p. 190.

SCLEROPHYLAX.

The plant upon which this genus is proposed to be established, was found by me during my rapid journeys across the Pampas, from Mendoza to Buenos Ayres, in 1825 and 1826, but I could not examine its details until 1827, when I was first able to observe the results of the present analysis. It is of a prostrate, succulent habit, resembling much that of a *Tetragonia*, more especially as the drupaceous covering of the seed becomes ligneous and spinescent, owing to the enlargement and tumescence of the calyx, which finally encloses the capsule. My attention having again lately been directed to this anomalous plant by Sir William Hooker, at the suggestion of Prof. Arnott, who had noticed it in the collection of Doctor Gillies, I was induced to examine the specimens existing in the Herbarium of the former distinguished botanist, which I found to constitute two other species, distinct from that of my own collection. These plants are certainly very curious in their structure, and cannot be referred to any known natural order. Their leaves are geminate, as in the *Nolanaceæ*, and they resemble in their fleshy and prostrate habit, many of the plants of that family, with which also the structure of their flowers corresponds, although these are very small and inconspicuous, approaching in size and form to those of *Petunia parviflora*, which I have described in Illustr. So. Am. Pl. p. 111. plate 24; for the

---

us, if we rightly understand it, a modification of that of the celebrated professor, which we have already explained, and which supposes that the stigmata of the lateral carpidia have avorted.

Dr. Lindley, likewise, in his *Nat. Syst. p.* 58, after recording this opinion developed in the Bot. Reg. adds these words: "or each of the two lobes of the stigma is composed of two half lobes belonging to different carpels;" to this phrase copied into his *Veg. Kingd. p.* 252, he subjoins in that work, "as in Poppyworts." Though this explanation does not appear to coincide entirely with the opinion of this learned author, yet his language seems evidently to imply a similar theory to that we have advanced.

tubular corolla is, in like manner, ventricose on one side, with a somewhat five-lobed, companulate and slightly bilabiate border, and it offers quite the induplicato-valvate æstivation of the *Nolanaceæ* and *Solanaceæ*. The calyx has a very short, fleshy tube with five unequal, erect segments, two of them being reduced to the size of small teeth, while the other three are more or less half the length of the corolla; in two species these are foliaceous and singularly veined, in the other they are subulate and fleshy; the tube of the calyx enlarges and becomes intumescent and bony, as the fruit advances to maturity; and in the last mentioned instance the calycine lobes in like manner are at length converted into spines. The structure of the seed, however, is quite at variance with that of the *Nolanaceæ*, approaching nearer that of the *Myoporaceæ* or *Ehretiaceæ*, for the drupaceous calyx encloses an indehiscent, 2-celled carcerule, with a single seed suspended from the summit of each cell, the almost straight and inverted embryo being nearly the length of its fleshy albumen, and having a small superior radicle with two oblong, compressed cotyledons. I have called the genus SCLEROPHYLAX, from *σκληρος*, *durus* and *φυλαξ*, *carcer*, because of the manner in which the seed-vessel becomes incarcerated by the singular enlargement and bony intumescence of the calyx. The following generic character will explain its structure.

SCLEROPHYLAX. (gen. nov.)—*Calyx* 5-partitus, tubo 5-gono brevissimo, laciniis 2 vel 3, elongatis, triquetris, subulatis, aut interdum expansis, foliaceis, subcarnosis, alteris brevibus, fructifer auctus. *Corolla* hypogyna, gamopetala, tubo infundibuliformi, sub faucem contractam superne ventricoso, limbo brevi, 5-plicato, subcampanulato, sub-bilabiato, labio superiore 3-lobato, inferiore 2-lobato, lobis omnibus æqualibus, brevibus, obtusis, æstivatione induplicato-valvatis. *Stamina* 5, tubo corollæ inserta, inclusa: *filamenta* inæqualia, gracilia, paulo dilatata, uno breviore, alteris subæqualibus, apice incurvato-declinatis: *antheræ* 2-loculares, ovatæ, basi cordatæ, in sinu affixæ, connectivo nullo, rima longitudinali extus dehiscentes. *Pollen* ovatum, longitudinaliter 3-sulcatum. *Ovarium* superum ovatum, conicum, 2-loculare: *ovula* in loculis solitaria, apici appensa, anatropa. *Stylus* fili-

formis, longitudine staminum, apice inflexus. *Stigma* sublaterale subliguliformi-capitatum. *Fructus* e calyce incrassato et demum indurato nucumentaceus, lignosus, turbinatus, 5-gonus, vertice depresso, et stylo perforato, angulis inæqualiter elongatis, spinisque 2–3 longis interdum terminatis. *Carcerula* omnino inclusa, libera, chartacea, indehiscens, 2-locularis, loculis monospermis (uno antico, altero postico). *Semen* inversum, obovatum, ex apice pendulum: *testa* tenuis, chalaza apicali rapheque longitudinali sublaterali notata: *embryo* in axi *albuminis* carnosi paulo incurvatus, *cotyledonibus* oblongis, compressis, crassiusculis, *radicula* brevi tereti supera, 2-plo latioribus, et 3-plo longioribus. Herbæ *prostratæ*, Americæ intertropicæ *indigenæ;* caulibus *plurimis, angulatis, flexuosis, divaricatim ramosis:* foliis *geminatis, spathulato-oblongis, cum petiolo continuis*; floribus *axillaribus binis,* [1 *præcociore*], *insertione petiolorum fere sessilibus, ebracteatis;* fructibus *deflexis, plerumque ad axillas deformatim concretis, nodos tumescentes et spinescentes formantibus.*

1. Sclerophylax *spinescens:* prostrata, caulibus humifusis, diffusis, nodis spinescentibus: foliis geminatis spathulato-oblongis, subcarnosulis, glaberrimis, eveniis, margine tenui integris; floribus folio florifero brevioribus, omnino glabris, calycis lobis triquetro-subulatis, carnosulis, angulis membranaceis demum spinescentibus.—Arroyuelo de San Josè, Prov. Cordovæ, in uliginosis salitrosis. *v. v.*

This species was found by me in the locality above quoted, growing abundantly on the margin of saline swamps, and is probably diffused over the Pampas in similar situations, as I find in Sir William Hooker's Herbarium, specimens collected by Tweedie, from the neighbourhood of Buenos Ayres. The branches, dichotomously ramifying at each axil, spread out to the length of about eighteen inches; the stems are angular and herbaceous; the leaves, including the petioles, are about the length of the internodes, one and a quarter, to one and a half, sometimes two inches; they are oblong, scarcely acute at the apex, tapering towards the base into a petiole of the length of the blade, which is three lines broad; they are somewhat fleshy, the main rachis, as well as a very few

nerves, are remarkably tortuous, and are quite veinless, or, at least, the veins are so deeply immersed as not to be visible. The leaves of the younger axils, at the period of flowering, are scarcely longer than six lines, and the flowers do not exceed three lines in length. The fruit, which is rarely free, is quite turbinate, with a thin fleshy pericarp, investing a hard bony nut of similar form, four lines long, depressed and disciform at the summit, the angles being terminated by sharp spines, of which three are erect, and nearly as long as the body of the fruit: this encloses a small oval carcerule, or indehiscent, two-celled, chartaceous capsule; the single suspended seed which fills each cell, is two lines long, and is very slightly incurved, tapering to the summit. The most remarkable anomaly attached to this plant, is the spiny intumescence of the axils: this is nearly a constant character, and is only wanting in the few instances where the short peduncle of the flowers and fruit remain perfect and free; in most cases, owing probably to the operation of insects, the two nuts formed at each node, become deformed and absorbed into the axil, which, in consequence, swells, and forms a many-spined, salient, knotty, and prickly joint. On opening these, I have always found the grub of an insect, which has generally destroyed one of the seeds. This character is not singular, for Chamisso and Schlechtendahl describe a plant from Mexico (*Gongylocarpus rubricaulis,* Linn. 5.558), belonging to the *Onagraceæ,* where the drupaceous fruit in like manner, and probably from a similar cause, becomes concrete with each axil, which hence assumes a swollen and deformed appearance.*

2. Sclerophylax *Arnottii*: nana, prostrata, ramulis paucis brevibus: foliis spathulatis, sub-3-lobatis, lobis lateralibus rotundatis, subdeltoideis, apice obtusiusculis, mucronulatis, fere eveniis, margine membranaceis, basi in petiolum longum linearem attenuatis: floribus parvis, calycis lobis inæqualiter foliaceis, in fructu persistentibus, nervis 3 parallelis retrorsum anastomosantibus

---

* A figure of this plant, with full generic details, will be given in the Illustrations of South American Plants, plate 25.

notatis, corollæque tubo brevi, ventricoso, imo-coarctato, scabrido-pilosis.—San Juan, Prov. Argentin-—*v. s. in Herb Hook.* (*Gillies.*)

This is very similar in habit to the former species, but from the solitary specimen I have seen, it appears altogether more diminutive, the branches extending only three or four inches in length: the leaves, however, are larger in proportion; the blade is broadest at the base, contracted in the middle, and terminates in a narrow, obtuse, and mucronulate apex; at base, it tapers gradually into a narrow linear petiole of equal length, being altogether one inch long, and three and a half lines broad: they are thick and fleshy, and without any apparent venation: the flowers are five or six lines long; the corolla is broader in proportion, and, as well as the calyx, is covered with short rigid jointed pubescence: the calycine segments are broad, foliaceous, oblong, pointed, three of them being half as long as the corolla; they are very distinctly veined, with three almost parallel nervures, connected together by several retrorsely branching veins: the tube thickens, as in the preceding species, into a hardened nut-like body, which, in like manner, becomes conglomerated with the axillary node; it is crowned with its persistent foliaceous lobes, which, however, do not become spinescent, as in the former species. The structure of the flower, the stigma, and the seed, exactly resemble that of *S. spinescens*, except that the stamens are in some degree shorter, the anthers scarcely rising above the middle of the tube of the corolla.*

3. Sclerophylax *Gilliesii*: planta rigidior, prostrata, caulibus crassioribus, angulatis, flexuosis, nodis valde tumidis: foliis geminatis, spathulato-rhomboideis, nervosis, utrinque glaberrimis, nitidis, nervis venisque prominentibus, in petiolum brevem latum attenuatis: floribus folio florifero longioribus, calyce 5-gono, tubo brevissimo, lobis inæqualibus, foliaceis, lineari-lanceolatis, fructifero valde aucto: corollæ tubo paulo ventricoso, glabro, genitali-

---

* This species will be figured in the Illustrations of South American Plants, plate 26 A.

bus duplo longiore, limbo 5-lobo expansiore sub-bilabiato.—Rio Diamante, Prov. Mendozæ Argentin.—*v. s. in Herb. Hooker* (*Gillies*).

This plant is very distinct in its habit from the two former species, the stem being much thicker, far more flexuose and angular, with more distant internodes, the petiole and part of the blade of the leaves, together with the ripening fruit, being often confluent with the axils, which are much more swollen, the petioles in such cases becoming confluent with, and their margins decurrent on, the angles of the stems; the petiole is shorter and broader than in either of the former species. The leaves, including the petiole, are nine lines long, and three lines broad; and unlike the two former species, they are marked with distinct nerves and veins, which are especially prominent below. The tube of the calyx is short, but its border is divided into five large, broad, foliaceous leaflets, which are somewhat unequal in length, two of them being one-third of the length of the flower. The corolla is far more slender and infundibuliform than in the two preceding species, and is altogether seven lines long, the tube being quite glabrous, and rather ventricose above; its border somewhat bilabiate, is divided into five equal, short, obtuse lobes. The stamens are unequal in length, the two longer ones scarcely reaching the middle of the tube of the corolla, and the fifth shortest is not declinate at the apex as the four others. The fruit, in every instance I have seen, becomes enclosed in the tumescent axil; the tube of the calyx enlarges, and becomes converted into a hardened ligneous covering, which is crowned by its persistent foliaceous lobes: the seed in its structure differs in no way from that of the two preceding species.*

The plants just described, cannot be referred satisfactorily to any known natural order. They resemble *Nolanaceæ, Ehretiaceæ, Convolvulaceæ,* and *Solanaceæ,* in their tubular corolla, with five included stamens, and more especially the latter in the induplicated æstivation of its border, but they differ from all these families, by having a two-celled ovarium, with a solitary ovule suspended from the summit of each cell, and in having a nearly straight embryo, with superior radicle. The approach to *Nolanaceæ* is more evident, by their being in like manner prostrate or straggling succulent plants, growing in saline moist places, by their geminate, spathulate, fleshy leaves, with expanded petioles, one of which is always inserted laterally a little higher than the other upon the stem, to the salient angle of which one of their edges is generally decursively continuous; they have also a solitary flower at the origin of each petiole. They differ, however, from that order, in having a single two-celled pistillum, not distinct ovaria, for *Nolana,* and most of its congeners, have always several distinct gynobasic carpels, generally one-celled, but some of these are often united without regularity into two or many-celled nuts, which, in such cases, never present more than a single ovule in each cell. *Grabowskya,* which I have referred with some hesitation to *Nolanaceæ,* but which probably represents the type of a distinct suborder, exhibits a similar tendency to form spines at the axils, and presents also a single pistillum, terminated by a lengthened style, and two two-celled nuts, each with a solitary ovule, but here, as in the true *Nolaneæ,* the embryo is nearly annular, with the radicle pointing to the basal hilum. The group of plants in question appears to differ from *Nolanaceæ,* exactly as the *Myoparaceæ* are held distinct from *Verbenaceæ*; viz., by having a somewhat bilabiate corolla, and a superior, instead of an inferior, radicle. From the *Scrophulariaceæ* they are distinguished by a very different æstivation of their corolla, and more particularly by a totally different structure of the ovarium and seed, in which latter respect they also differ from the *Solanaceæ,* notwithstanding that they much resemble this order in the shape and æstivation of the corolla. They certainly approach, in many respects, to the *Myoporaceæ,* (especially through *Disoon* and *Nesogenes* with their bi-locular, 1-ovulate ovaria), with which Order they agree, in their somewhat bilabiate corolla, and in having suspended ovules and albuminous seeds with a straight embryo and superior radicle; but they differ in the æstivation of the corolla, in possessing five, instead of four stamens, in their anthers being two-celled, with longitudinal dehiscence, in their leaves being geminate, not opposite, and in their fleshy herbaceous habit, not having ligneous erect stems.

---

* A drawing of this species will be shown in the Illustrations of South American Plants, plate 26 B.

To the *Stilbaceæ* they also appear to offer some approach, on account of their tubular calyx with unequal teeth, their funnel-shaped corolla with a bilabiate border, having an induplicate æstivation, and a superior two-celled ovarium, with a single ovule in each cell: but this is erect, not suspended. They have also a slender capsule enclosed in the persistent calyx, and although it is two-celled, and monospermous in each cell, the seed is erect, and the embryo has an inferior, not a superior, radicle. They differ in many other respects, and are altogether extremely different in habit.

There are many analogous points of structure common to *Trapa* and *Sclerophylax* that should not be lost sight of. In the former, the calyx, though only half inferior, enlarges in like manner in fructification, entirely grows over the ovarium, and finally becomes enlarged and lignescent, the lobes being also converted into spines. The corolla, although consisting of distinct petals, offers a plicato-valvate æstivation. The ovarium is two-celled, with a single ovule suspended in each cell. Here, however, the analogy ceases, for in *Trapa*, by the abortion of one of the ovules, the fruit becomes one-celled, with a single exalbuminous seed, and although the radicle is superior, the embryo, from the diminutive suppression of one of its lobes, becomes pseudo-monocotyledonous, added to which, the habit of the plant is quite distinct, and its alliance very remote.

To *Tetragonia*, as I have before observed, there is certainly much apparent resemblance, but it is altogether external, for notwithstanding the similarity of its habit, and the spiny intumescence of its fruit, there exists no analogy whatever in the structure of the flower, or of its seed, to that of *Sclerophylax*.

On a former occasion (Lond. Journ. Bot. vol. iv. p. 514,) I have endeavoured to trace the relationship of the *Borragineæ* to the *Convolvulaceæ*, through the intermedium of *Nolanaceæ* and the

Dichondreæ, on account of the gynobasic insertion of the carpels, but the transition is now more distinctly visible and gradual, through the medium of the *Ehretiaceæ,* this *new group,* and the *Nolanaceæ.*

This affinity of *Sclerophylax* (having suspended ovules) with the *Nolanaceæ* and *Borragineæ,* (having gynobasic carpels and erect ovules,) it must be confessed, does not, at first sight, appear so evident as will be seen on further enquiry. In this consideration, one feature should be constantly borne in mind, I mean that of the relative position and mode of attachment of the ovules: in most cases analogous to the present one, (*i. e.* where the radicle of the embryo points towards the hilum,) these may vary either in having a superior point of suspension, an axile attachment, or a basic origin,—differences that really amount to little else than the relative height of the point of adhesion of the carpels, or that terminal summit of the gynobase, where its nourishing vessels, proceeding from the torus, penetrate the walls of the ovaria, and which can always be distinguished from the fertilizing vessels proceeding from the style. These several conditions have been ably explained by M. Aug. de St. Hilaire, in his admirable paper on the gynobase (Mem. Mus. 10, p. 131.) Following up this view of the case, there will not be found so great an amount of discrepancy in the structure of the seed of *Sclerophylax,* and that of the various genera included in the orders above mentioned; for, in examining the dissepiment of the seed of this genus, the gynobasic vessels (as might be expected) are seen as a distinct rachis along its central axis, terminating in the point of suspension of the ovules, and presenting an instance somewhat analogous to that which St. Hilaire calls an elevated gynobase. In *Nolanaceæ* and *Borraginaceæ,* where generally there exists, on the contrary, a very depressed gynobase, it is the style that is seen in an analogous position, as a rachis in the central axis of the carpels, in consequence of the ovaries having an entirely basic attachment: in these two extreme cases, the embryo is alike seen in the axis of the albuminous seed, with the radicle directed to the point of its attachment. Even in the Order *Bor-*

raginaceæ, where, in most instances, the gynobasic point of union of the carpels is generally on the level with the gynophorus itself, several instances occur, (in *Asperugo,* for instance,) where the apical point of the gynobase is mid-way, or near the summit of the axile line of juncture of the carpels, at which point they are in fact pendulous. In other cases again, this point is at the very summit of the carpels, as in *Mattia, Pectocarya,* and others of the tribe *Cynoglosseæ,* where the ovaries, at first pendulous, at length, after development, exhibit their carpels in an absolutely centrifugal position upon the summit of the gynobasic point of their attachment.

(*To be continued.*) p 57

Characters of three new Australian Mosses. By W. Wilson, Esq.

(Tab. I.)

1. Phascum *Drummondii*; caule brevissimo, foliis confertis subrotundis concavis nervo subcontinuo, seta longiuscula, capsula elliptico-oblonga rostellata. (Tab. I. A.)

Hab. Swan River, *Mr. James Drummond.*

In habit very like *Anacalypta latifolia* (Bryol. Eur.), but somewhat smaller, and the operculum quite indehiscent. Leaves collected into a little oval bulb, roundish, somewhat obovate, rather obtuse, very concave, the nerve ceasing just below the apex. Seta twice as long as the Capsule, which is of thin texture and very fragile. Calyptra dimidiate, covering half the capsule. Inflorescence monoicous, anthers pedicellate, mixed with subclavate paraphyses.

Tab. 1. A. Fig. 1, Plants; *nat. size.* f. 2, 3, single plants; *magnified.* f. 4–7, leaves. f. 8, apex of leaf. f. 9, anthers and paraphyses:—all more or less *magnified.*

2. Splachnum *Gunnii*; caule rigidiusculo crasso, foliis squarrosis carnosis obovatis acutiusculis apice dentatis evanidinerviis, capsula conica, apophysi valde dilatata peristomii dentibus erecto-incurvis. (Tab. I. B.)

Hab. Tasmania; on dead Tree-Fern, Acheron river, 1845. *Ron. Gunn, Esq.* n. 1625.

This very curious Moss may, perhaps, form the type of a new genus. It differs from other species of *Splachnum* in the peristome, which is not reflexed when dry, and probably in the dioicous inflorescence. The habit of the Moss, apart from the singular apophysis, is that of *Orthodon*, with which it agrees, especially in the structure of the peristome, and in its place of growth upon the trunks of trees.

Tab. 1. B. Fig. 1. Plants; *nat. size.* f. 2, portion of a plant; *magnified.* f. 3, leaf. f. 4, apex of ditto. f. 5, 6, 7, capsules. f. 8, teeth of peristome: all more or less *magnified.*

3. Orthotrichum *Tasmanicum*; caulibus plus minus confertis, foliis patulis subrecurvis lanceolato-subulatis margine reflexis siccitate suberectis, seta longiuscula, capsula elliptico-oblonga siccitate striata, ciliis octo latissimis carinatis integris conniventibus, calyptra pallida nitida pilosiuscula, vaginula pilosa. (Tab. I. C.)

Hab. On the young branches of *Hymenanthera angustifolia*, at N. Esk, Launceston, Tasmania, Sept. 1841. *R. Gunn, Esq.* n. 1629.

Stems at first growing singly from a dense stratum of radical fibres of a chocolate-brown colour, at length collected into lax tufts half an inch or more in height. Leaves yellowish-green, suberect, but scarcely crisped when dry. Capsules greenish when just ripe, afterwards pale reddish-brown, striated and cylindrical when dry, and empty of sporules. Operculum reddish, conical apiculate, not half the length of the capsule. Seta longer than the capsule. Calyptra moderately hairy, pale-yellow, and shining. Teeth of the peristome eight, buff-coloured, recurved when dry; cilia as long as the teeth, and nearly as broad, carinate, entire, whitish.—Monoicous.

In the large cilia this Moss is nearly allied to *O. elongatum*, Tayl., from which it differs in the leaves and calyptra. In the length of the seta it approaches to the Bridelian genus *Ulota*.

Tab. I. C. Fig. 1, Plant; *nat. size.* f. 2, upper portion of plant, with old fruit. f. 3, 4, 5, leaves. f. 6, apex of ditto. f. 7, capsule, seta, &c. f. 8, capsule. f. 9, calyptra. f. 10, peristome. f. 11, portion of ditto: all more or less *magnified.*

BOTANICAL INFORMATION.

Scientific Mission to Thibet.

In a Glasgow Paper of the autumn of last year the following information was given, under an article headed "*Political Mission to Thibet—Scientific Investigations.*"—From the *Delhi Gazette.* "A correspondent of the *Star* writes in reference to the arrangements for the Thibet Mission, that it will, in the first place, settle the boundary of Ghoolab Singh's territories in that direction; although there is some mystery made about its aims being purely commercial and unconnected with politics. After this is completed, the members push directly northward into Yarkund, and winter at a place called Koten. They are under orders not to move into Independent Tartary and Toorkistan on any account, because of the bigoted Moslemim in that direction. The party then separate,—one individual goes almost directly east (we believe Capt. Cunningham), and drops gradually upon Lassa; another skirts the Sampoo river towards the same capital (Lieut. Strachey); and a third (Dr. T. Thomson) proceeds botanizing along a range of mountains in the same line. After eighteen months, it is expected that the party will be reunited at Lahore (qy. Lassa); unless the Chinese Commissioners behave more courteously to Capt. Cunningham than he at present expects, and permit him to penetrate further eastward into the territories of the Celestial Empire."— The real object of this interesting expedition has not been made public; but so far as we can gather from the Indian newspapers, it is composed of three Commissioners—Capt. Cunningham (son of the deceased poet), an experienced officer of engineers—Dr. Thomas Thomson (son of the celebrated chemist of Glasgow), a distinguished naturalist—and Lieut. Strachey, an enterprising traveller, who lately succeeded in reaching the Manasarewa lake. The party left Simla about the 10th of August—amply supplied with instruments and provisions for two years, and were last heard of at Rampoor. It is understood that they are to proceed to Shipkee, on the Sutlej, where they will cross the river, proceed in a north-east direction across the Indus, and follow its course by the north of Cashmere, till they reach the point at which it turns to the south in the north-west of that country. There they are to winter."

"At the meeting of the London Geographical Society, on the 8th instant, a letter was read from Dr. Bird, secretary of the Bombay Geographical Society, stating that a mission was about to start for the borders of Chinese Tartary,—Capt. Cunningham of the Engineers, Lieut. Strachey, and Dr. Thomson, having been appointed for the purpose. The Calcutta and Bombay Asiatic Societies had furnished Government with lists of questions as desiderata on the Orography, Hydrography, Ethnology, and Archæology of Central Asia. The route to be taken by the Mission from India will be along the upper part of the valley of the Sutlej, near its origin; into which the travellers will pass after crossing the high southern ranges of the Himalaya mountains, by the Nitee Ghaut, at an elevation of 14,544 feet above the level of the ocean, and about the 31° of north lat. and 80° long. east of Greenwich. They will then proceed across the Sutlej valley to the junction of its eastern branch, the river of Lan-zing, with the Spiti river, which is here flowing from the northward; and will thence proceed by the Panjkang lake, to the Karokorum mountains, over which a pass leads to Yarkund;—or they will follow the pass across the mountains from Rodokh to Khoten, where they are desired to winter if possible; but if not able to do so, they are to remain at Rodokh on this side of the Kuenlun, or go on to Yarkund on the other. As soon as the season will admit of travelling, Captain Cunningham is to explore the course of the Indus to Ghilgit, and thence through the *terra incognita* of the Dardu and Hazarah countries to the Punjaub; while Lieut. Strachey will proceed through the district eastward of the Sin-kha-bab river, or eastern branch of the Indus to Gardokh and the Manasarewa lake—to which place he penetrated last year from the Kamaoon over the Himalayas. He may then follow the route into Eastern Thibet by the La Ganskiel pass, and is directed to explore from thence the course of the Sanpu, ascertaining whether it be the river of Ava or the Dihung, which falls into the Bramahputra. Dr. Thomson is to investigate all the mineral treasures of our northern frontier. The party is provided with barometers, thermometers, sextants, altitude and azimuth circles, magnetical instruments, and whatever is necessary for the extension of geographical knowledge."

Such we believe to be the amount of the information, hitherto, laid before the British Public, relating to a Mission which, we trust, from the talents and acquirements of the officers conducting it, will be productive of the most important results to science. Botany is there fully represented by our excellent friend Dr. Thomas Thomson, who bids fair to hold as distinguished a rank in that department of Natural History, as his father does in Chemistry: we know not if a higher compliment can be paid to him, and sure we are that it is merited. His correspondence with us since he commenced his botanical career in India is full of interest, but becomes tenfold more so when on the eve of setting out on the Mission in question. His previous letters had alluded to the journey; but that, dated *Simla, July* 5th, 1847, speaks of it with confidence; and he details the route, so far as it was considered right to make it known to the Officers, and as far as the Officers were justified in communicating it to their friends.

" Simla, 5th July, 1847.

"I have now to give an account of myself since my letter of the 5th of July. I wrote to you in the middle of the month, *viá* Calcutta, when Captain Cunningham, of the Engineers, had been appointed head of the expedition. We are now waiting for Lieut. Strachey, who is expected daily; and I hope we shall have started by the 15th day of the month. The only additional particulars which I can give you regarding our movements are, that our direction will be up the Sutlej, through Kanawur to Shipkee, the first village of the Chinese territories. Thence we shall proceed in an easterly direction to Garoo, or Gartepe, on the Indus, where we expect to meet a party of Chinese Commissioners, with whom we shall proceed in a north-westerly direction to the Chumoreleel Lake, which in my map is laid down about 32° 45′ N.Lat., and 78° 15′ E. Long. Here the undetermined part of the frontier between Gholab Sing commences, which it is our first object to fix. Our course will be to the N.E., till some way after crossing the Indus, after which we shall turn to the north: the approach of winter will probably oblige us to stop before we reach 34° N. I had all the direction pointed out to me by Cunningham, on his own maps; but having none of my own with any details, I should only lead you astray if I attempted to enter into particulars. Ladakh, (or Leh, which is the proper name,) will probably be our place of abode during the winter, and in spring we shall resume our course to the N. and E., passing to the S. of Yarkund and Kashgar, as far as about 72° E. long. My position next midsummer will, therefore, probably be at some distance to the N. of Kashmeer, provided the present arrangements are carried out; but these differ so much from what were supposed at the time I wrote last, and so much more from those talked of on my first arrival here, that I still doubt. Cunningham, however, is acquainted with the country, and therefore is the most likely person to know. A glance at the map will show you that our route will lie over an immense tract of almost unexplored country, from which I hope to bring back an infinity of interesting materials.

"I have been too much distracted by a multiplicity of occupations, in the way of preparation for my journey, to work much while here. I have collected pretty extensively, but have got little new. The rains commenced on the 21st of last month, and have already produced a very luxuriant vegetation. The dampness, however, makes the plants tardy in flowering: a few sunny days would, I think, bring out plenty of flowers. Three or four *Araceæ* abound all over this place,—and with a beautiful purple *Zinziber*, at present give the principal character of the vegetation. About a dozen *Labiatæ*, some shrubby, some herbaceous, are very common, but they have not yet flowered. You must be quite familiar with the characters of the vegetation of this part of the Himalaya, which is included in what may be called the lower temperate zone. *Quercus lanata*, *Rhododendron arboreum*, *Andromeda ovalifolia*, *Cedrus Deodara*, *Pinus excelsa* and *longifolia*, *Abies Smithiana*, *Ilex dispermum*, *Cerasus* sp.—are the trees: *Viburnum*, (2 sp.) *Rosa*, (2 sp.) *Berberis*, *Rubi*, and many other species of shrubs, &c. &c. &c. The top of the highest hill is 8,300 feet, *Quercus semicarpifolia* does not grow here, but is plentiful at Mahagoo and Fagoo—respectively six and ten miles off—I suppose about 1000 feet higher. *Q. semicarpifolia* is characteristic of a higher elevation, as is also *Abies Pindron*—a tree which, as far as I can recollect, seems not different from *A. Webbiana,* which I formerly collected in Gurhwal. I shall, however, by-and-bye, have an opportunity of comparing them. I went out to Fagoo about the 15th of last month, and remained there two days, intending to go three marches into the interior, but the threatening state of the weather deterred me. The road is the same by which I shall travel ten days hence, which made me less anxious to proceed. I have, as you know, been on Gurhwal as high as an 10,000 feet; and as none of the mountains near this attain such elevation I have met with no novelty on them. In fact the vegetation here and at Nynee Tal, may, I think, be said to be identical. Minute comparison will, no doubt, point out many variations—for instance, *Coriaria Nepalensis, Cornus oblonga, Myrica esculenta, Acer oblongum, Rhus* (entire-leaved,) *Cupressus torulosa, Carpinus, Symplocos,* all common at Nynee Tal, I have not seen here, but in all probability I shall meet with them in the neighbourhood; while *Pinus excelsa, Abies Smithiana,* and the *Deodar,* do not occur at Nynee Tal, and are all, however, found in Kamaon. I shall pay great attention to geographical distribution as I go along, and hope to accumulate a great many useful data. I have been reading Jacquemont, and, finding much to interest me, have extracted all the botanical observations of the Himalayan part to take with me: he is sometimes fanciful, and is amusingly bitter against English travellers, and Anglo-Indians in general; but I think him a very careful observer: his notes were of course intended to be filled up at a future time by study of his collections, had not his death interfered, for he overlooks many common plants which he must have often seen. He says, for instance, that he never saw a *Vitis* in India, till he reached the Dhoon. His plates, I think, often contain old plants under new names, for which I presume his editor, and not himself, is to blame;

for he seems inclined, so far as I can gather from his book, to take a rational view of matters, and even to identify Indian plants with European ones oftener than is quite correct, as in the case of the Rhus, mentioned above, which he calls R. Cotinus. Jacquemont's account of Kunawur leads me to anticipate a very rich harvest on my journey: he mentions having collected forty new species in one day, and in general of very rich herborizations. By all accounts, the interior of W. Thibet is bare and unproductive; still along the Sutlej and Indus, and among the mountains, though trees are deficient, I hope to find a plentiful herbaceous vegetation. I start, provided with the means of making ample collections of duplicates, and hope to be able to carry a large stock of paper with me throughout, and though I shall be obliged to deposit my accumulating specimens here and there, I trust to make good arrangements for their transmission to India.

"As the time of my departure approaches, I get more and more restless and anxious about my arrangements, and I find I cannot settle down to write you a long letter. Henceforward my letters will be written regularly, but I cannot at all guarantee that they will reach you punctually, as my opportunities will only be occasional, and there will be no certainty of hitting the departure of the mail. When we leave this, we go down into the valley of the Sutlej, where I shall have a last look, for some time, I hope, at tropical vegetation. I am expecting the arrival of the mail, but can hardly hope for a letter from you before I start: my letters, however, will doubtless follow me, some way or other."

"**Rampoor, on left bank of Sutlej;**
"**six marches from Simla, 9th of Aug. 1847.**

"After considerably more delay than I anticipated when I last wrote, our party has finally made a start. We left Simla on the 2nd of August, and arrived here yesterday, having halted one day upon the road. To-day, we have also halted, to get our baggage put in order; and to-morrow we shall again proceed on our journey, and stop no more for at least a fortnight. My communication with India will be hence-forward very irregular, and you must not be surprised at not hearing from me by every Mail. I shall write, at least, once a month, as materials accumulate; and my letters, though they may travel slowly, will (unless something unfortunate occurs) reach you very safely.

"The road from Simla hither is beaten ground. We march on the very track which Jacquemont followed; though, being a month later, I miss many of the plants he mentions. The first four marches are high, except in one place, where tropical forms just begin to appear, *Cedrela Toona* being one of the first trees which indicates the commencement of tropical vegetation. The first day I did not leave Simla till four P.M., and got thoroughly wet ere reaching the end of my day's journey. The second day was also unfortunately wet; but we have since had good weather, perfectly dry till to-day, when there is rain again. Our third halting-place, Nagkunda, is about 9,000 feet above the sea, and Hattoo, a mountain over-looking it, is 1,700 feet higher. We were compelled to stop a day at Nagkunda, to await a large quantity of our luggage, which was still behind, and took the opportunity of ascending the mountain-top, which is richly wooded to within a very short distance from the summit. *Quercus semicarpifolia* is the tree which rises highest; a few bushes of it occur close to the peak: the common *Taxus, Abies Smithiana,* and *A. Webbiana*? (Royle's *Pindron*). I cannot call to mind any difference between the tree of these hills and *A. Webbiana,* which I have from Kamaoon; but I will compare the two when I return to the plains. It is very remarkable that *Pinus longifolia* seems to have entirely disappeared since leaving Simla, and to be replaced by *P. excelsa,* which descends at least as low as 6,000 feet. Since quitting Simla, I have been accumulating new species with great rapidity, but have not yet got them into order. Our fourth march was to Kotgurh, elevated about 6,600 feet. The road passed a beautiful glen, probably a thousand feet lower, where I made a very fine collection. From Kotgurh we descended into the valley of the Sutlej, which we joined where its elevation might be a little more than 3,000 feet above the sea. The change of temperature was very great, and that of vegetation equally striking. The thermometer rose considerably above ninety degrees; and from *Oaks* and *Pines* we found ourselves among *Dalbergia Sissoo*, *Euphorbia pentagona*, and other tropical plants, with *Mangoes*, *Plantains*, &c., in the gardens. The valley of the Sutlej is excessively bare, and, except round the villages, scarce a tree can be seen. I was surprised to find, amongst the hill-plants which descend into the valley, some of the most peculiarly European forms,—for instance, *Geranium*, *Plantago*, *Bupleurum*, and another *Umbellifera*, *Agrimonia*, *Chenopodium*, and *Labiatæ*, grow at the same elevation with *Cassia Tora*, and American *Sidæ*, *Mollugo*, *Triumfetta*; and other plants. Altogether, the journey through the valley, though very hot, has been exceedingly interesting.

"Rampoor, whence I now write, is a place of considerable size, for the hills, and carries on a flourishing trade to and from the Chinese territories, shawl-wool being the principal import. To-morrow, we re-ascend to upwards of 6,000 feet, and may expect, therefore, a cool climate again, and different plants. Our future progress will probably be uninterrupted for some time. At the fifth march from hence, we shall cross the Sutlej, make six or seven marches along its right bank, then turn north at Kanum and Sonngum, across the Hungarung Pass, up the valley of the Spiti river, to where it is joined by the river Para, up which we shall travel to its source, near the Chumooreleel lake, where we expect to arrive about the 5th of September.

"I do not, at present, like to venture on any further speculation either of route or time. When we meet our friends the Chinamen, we shall probably be able to form an idea. The season of seeds will be at its height, when we are in the high regions of Tartary; and I think it may be worth while trying to send some home to you, if I meet with anything likely to prove ornamental or useful. I may probably have the opportunity of seeing some of the species of *Rhubarb*, and, at all events, will do my best to ascertain the history and place of growth of this valuable drug."

"Daukur, on the Piti river, north bank, Sept. 2, 1847.

"I wrote from Rampore on the 9th ult., and have now to continue the record of our subsequent progress. At Rampore, we were in the valley of the Sutlej, about 3,200 feet above the level of the sea, and consequently surrounded by an almost tropical vegetation. Our route, for four marches, lay along the left bank of the river; but, a short way beyond Rampore, we ascended to the level of temperate vegetation, and, generally speaking, continued in it, though in every march there were two or three descents to the margins of small streams, flowing from the snowy mountains on our right, and which brought us down again the plants of low elevations. Advancing eastwards, a few species gradually appeared which indicated our vicinity to the dry climate of Kunawur. Indeed, two plants, at least, which abound in that country, extend down the Sutlej as far as Rampore, where the hot exposed river-banks seem to enable them to withstand the greater quantity of rain to which they are exposed. The two species which I mean are a Caper (I presume *Capparis obovata* of Royle), and a tall prickly-stemmed *Lactuca*.

"On the 14th, in the middle of our fifth march from Rampore, we crossed the Sutlej by a bridge, and pursued our course along its right bank. Here the river being at an elevation of 5,200 feet, we found ourselves beyond the usual boundary of tropical vegetation. *Pinus excelsa* grew nearly down to the bank. Still, from the lack of trees, the heat was great, and a few plants occured indicative of low stations. It is difficult to define the precise limit, botanically speaking, of Kunawur. The change of vegetation is gradual, and bears, of course, some reference to the diminution in the quantity of rain. On the night of the 12th, at Turanda, we had heavy showers; but since that time, except a slight sprinkling on two afternoons, the weather has been perfectly dry. Turanda is situated on a lateral spur of the great mountain range, which runs parallel to the river on the south: it is elevated about 8,000 feet, and covered with a beautiful forest of *Deodars*. It was not, however, till the 14th, when we passed the Sutlej, that new plants began to appear in any great numbers, since which time, every day has produced a vast deal of novelty. Our route, through Kunawur, lay along the right bank of the Sutlej, generally about 2,300 feet above the river, and through Meroo and Rogee to Pungee. The country is extremely mountainous, and the roads of the most difficult description, frequently passing along the face of precipitous rocks, and supported there by wood-work and planking, fixed into holes in the rock. The forest continued to accompany us, the *Deodar* seemingly adapting itself to the dry climate. On the 15th, *Pinus Gerardiana,* and the Kunawur *Fraxinus,* made their appearance. It is around the villages that the great beauty of this country is concentrated. There the cultivation is very rich, and the houses stand embosomed in groves of fruit-trees, *Wallnuts* and *Mulberry* growing in the lower spots, and *Peaches* and *Apricots* everywhere. The *Grapes* were ripe in the warm parts of the valleys, but as we ascended, we found them still immature.

"At Pungee we quitted the course of the river, and striking towards the north, began traversing a series of mountain ranges, crossed by the Weering, Roonung, and Hungarung Passes, which are respectively at 13,200, 14,500, and 14,800 feet of height. We took two days to each of these Passes. The first day we always proceeded as near the top as we could find water, and next morning we surmounted the ridge and descended into the valley. During these six days, from the 18th to the 23rd, the change of vegetation was most rapid, and I can hardly conceive any country whose aspect alters more quickly and completely. On the south side of the Weering Pass, we had beautiful forests of *Deodar* and *Gerard's Pine*: higher up grew *Pinus excelsa*; but on the north face, when descending, though we were still surrounded with forests, the nature of the trees, and their number, were greatly altered. *Birches* were first seen there, and curiously enough, a good deal of *Pinus Webbiana,* both of which are wholly absent on the other side. When we started from Lippa to ascend the Roonung Pass, we found the forest exceedingly scanty, and soon giving place altogether to *Junipers*; while on the descent to Soongnum both *Deodars* and *Pinus Gerardiana* re-appear, though in very small quantity, and miserably stunted. Beyond Soongnum, on my way up the Hungarung Pass, a solitary and wretched *Gerard's Pine* was seen, and this kind of tree had wholly vanished from the northern face. Now, I have selected these trees as the most marked and prominent features of the change of vegetation; but in herbaceous species the alteration is yet more complete. It is obviously impossible to enumerate them. As we advanced, *Astragali, Artemisiæ,* and *Chenopodiaceæ* increased in numbers, and sometimes almost usurped the soil, each kind of plant growing in large patches. The *Junipers, Astragali,* and *Caragana* formed round tufts: the others sprang up among the rocks and stones, and in the coarse gravel which generally covers these mountains. The most prevalent and tenacious among Indian plants seems to be a *Cynoglossum,* which has followed us even here, and *Salvia rubicola,* which only ceased a week ago.

"On the 24th, we arrived at Sio, on the right bank of the Piti river, elevated about 9,000 feet above the level, but where luxuriant crops of *Millet, Buck-wheat,* and *Apricot Trees* grow in the greatest profusion. I have purposely abstained from noticing the Alpine plants, with which the summits of the Passes presented me in vast abundance, because, generally speaking, I have been unable, through want of time, to examine and name them; and my ignorance of the Himalayan productions, at similar altitudes, forbids my drawing any comparison between them. I may, however, state that the vegetation of the three Passes, near as they are to one another, is strikingly different, both in the number of species, and of individual plants. In the latter, particularly, the diminution was exceedingly marked.

"At Sio, we crossed the Piti river, and ever since, our course has led through a country, much resembling the Hungarung Pass, and its immediately adjacent districts. We have been gradually rising as we advance, and the bed of the river, at this place, having an elevation of 11,000 feet above the sea, we cannot, of ourrse, go below that level. Ever since crossing the Piti, we have kept very near its left bank. The face of the country, from the time we left Sio, has been exceedingly bare, covered with gravel where it is rocky, and the vegetation, of course, extremely scanty, save on the banks of streams, which occasionally spread, forming a green marshy turf, which affords a good number of small plants.

"On the 30th ult., I noted all the species which occurred during a march of ten miles, and found the number to be fifty-nine (exclusive of *Cryptogamia*). At our present altitude, the plants are, with scarcely an exception, European or Siberian forms. *Artemisiæ*, *Astragali*, and *Potentillæ* prevail. The only tree is *Juniper*, and a miserable affair it is. The shrubs consist of *Hippophäe*, *Tamarix*, *Rosa* (*Rosa Webbiana*, I believe, in great profusion), and two kinds of *Ribes*, one is very rare, *R. nigrum*, and bears a large and pleasantly tasted fruit, *Willow*, *Fraxinus*, *Colutea*, and *Rhamnus*. In marshy spots grow some pretty *Gentians*; one, found to-day, seems to be *Gentiana Moorcroftiana* of Wallich; also a minute *Ranunculus*, and a *Carex*, &c. The only *Rhubarb* I have yet met with is, perhaps, the *Rheum spiciforme* of Royle; but its flowering season is past, and even the seeds are all dispersed.

"The above is a rough and confused sketch of our progress, botanically speaking; and now to pass to more personal matters. We have been sadly annoyed, occasionally, by heavy rain, and even soaked through almost daily. My poor specimens did not relish such weather at all, and have suffered terribly in appearance. My collections are very large, though, owing to our constant movement from place to place, I have been unable to do more than gather the plants: to examine and name them was, obviously, impracticable. Since quitting Simla, I have obtained upwards of four hundred species with which I was previously unacquainted. Now, however, the country and the season are becoming unfavourable, and in a very few weeks I shall find nothing, and shall have thus a little respite from collecting, and get time to compare and determine the produce of my labours.

"As to our future progress, the present intention is to go three marches farther up this river, and then turn to the north, over the

Parung Pass, and down upon the Chumoreleel lake. This route is all through our own territory, and that of our dependent, Gholab Singh, but the Parung Pass being, according to Trebeck and Moorcroft, 19,000 feet high, and covered with snow on its northern face, is likely to offer formidable obstacles to our progress. Leh, which is our destination, is elevated 11,000 feet above the sea, and the Chumoreleel lake 15,000, and as it is impossible in these high districts to calculate on finding the country free from snow in the middle of September, it is likely we may have a run for it! I shall address you again from Leh, which we expect to reach early in October, unless an opportunity of writing occurs sooner, and if so, I will surely not neglect it.

"You may easily believe that I enjoy this Expedition immensely; though if I were free to govern my own motions, I would travel more leisurely, taking shorter marches, and halting, now and then, when the country promised to be interesting. If the weather continues fair, I hope to find good botanizing in the Parung Pass. At a height of 19,000 feet, one must almost touch the extreme boundary of Phænogamic vegetation. But, according to our school-boy phrase, 'we shall see what we shall see.'

"My last English letters bore date the 15th of June. Newspapers, up to the 7th of July, reached us some time ago, and I hope the letters are not long behind. The communication with Simla is, however, very uncertain.

"The great object of my desire is now to penetrate northward, and to combine this journey with the Flora of Altai. Perhaps I may be able, next year, to explore the great mountain chain north of the Indus, crossing the Passes, here and there, and entering the Chinese Territories: a plan in which I should anticipate little difficulty, because for several marches beyond the northern face of the Passes the country is uninhabited. It would be delightful to visit the Russian Possessions, *viá* Yarkund! but there a disguise would probably be needful, and I am naturally rather deficient in that appendage to the human countenance, namely, beard, which most effectually baffles recognition.

"All these speculations are, however, still in embryo: nothing for nothing may come of them; but you may be sure my best efforts to investigate the country will not be wanting, and that I shall eagerly avail myself of every opportunity which the present expedition may afford.

I have already met with many productions of the Altai. I gathered *Chamærhodos* (a *Rosacea,*) the other day, which, unless Jacquemont found it, is new to Kunawur. The same is the case also with the *Black Currant,* if distinct from our common species. Royle publishes many plants from Kunawur; but the localities are incorrectly given in his book, owing, apparently, to the native collectors having always stated the name of the nearest town or halting place, instead of the mountain where the specimens were gathered. Thus Lippa, Soongnum, Rogee, and Pangee, are all at elevations of from 8–9,000 feet; while it was at 12–15,000 feet that those northern forms of plants were found, for which those much lower spots are erroneously cited. Marsh plants, however, sometimes descend a good way farther down. Thus *Potentilla anserina,* a small variety, having foliage glabrous on both sides, occurs as low as 10,000 feet, but only near water. Royle's collectors must have been extremely diligent: hardly anything seems to have escaped them. I have gathered a few seeds, which I shall send to Simla, with a request that the Government Secretary will frank them to Sir William Hooker. By-and-bye I hope to have more. It is worth while trying these, even if they should not prove new or valuable: I shall forward duplicates of them to Saharampore, and so give them a double chance; and if they germinate there, and are worth sending to England, it can be done with no difficulty. I am not neglecting the *Acotyledones,* but they are few in number in these arid regions, save *Lichens,* which grow plentifully on the stones. I have only found one or two species of *Ferns,* and they are very alpine: the *Lycopodia* have also disappeared. Hardly any *Mosses* produce capsules at this season: probably in the cold weather, when going down the Indus, I may meet with them in fructification.

I cannot remember that I have much more to communicate.

By next month, I hope to write a more collected and fuller account of my proceedings.*

I have been trying to do something in Geology. Our late hurried mode of travelling is unfavourable to investigating the mountains: little can be effected beyond breaking off a specimen now and then, and packing it up in paper, with a note of the locality. We have had Granite, Gneiss, Mica, and Clayslate, Quartz, Sandstone, Conglomerate, and Limestone, all in most admired confusion. The only very evident fact to be deduced is that the Himalaya, and still more clearly the whole of Kunawur and Piti, have been a series of lakes, at a very recent period, the hills and valleys being to a great extent patched over with alluvial clays, occasionally containing small lacustrine shells. *Insects* are very scarce, and I have been unable to capture a single *Beetle*, though I have repeatedly searched.

Sept. 4th. We have made two marches since I wrote the previous part of this letter; but I have been laying out *Confervæ* and skinning a bird, and writing, ever since we arrived in camp, and it is now half-past 1, a.m.—time to go to rest! Farewell.

THOMAS THOMSON.

To the Subscribers to SENDTNER'S EXPEDITION INTO BOSNIA.

As we gave, in our last volume, an account of Dr. Sendtner's intended herborizing visit to Bosnia, we now publish an extract from a late number of the "Ratisbon Flora," which we are sure will be read by our subscribers with sympathy:—

"The winter, which was most unusually prolonged in the mountainous regions of Bosnia, obliged me to spend the early part of the season, until the end of April, collecting in the lower districts of the country, along the bank of the Save, and in the Podravina, where the spring Flora was somewhat more advanced. Several interesting discoveries were the result of this excursion. It was only on my return to the mountain valley round Travnik, in the middle of May, that I found the spring commencing there also. After having made a rich harvest in that place, till the end of May, I proceeded, in the beginning of June, in a south-west direction to the mountains of Sutyuska, Varesk, and Serajevo. My intention of exploring from Poinizza the schistose mountains of Secy, and the Vranizza, was frustrated by the hostile conduct and stupid suspicions of the inhabitants, as well as by the fresh-fallen snow, and I returned a second time to Travnik. Here the most brilliant prospects opened for the further prosecution of my journey, as I received from the Governor of Bosnia, the Vizier Kiamil Pacha, the favour of a more positive *Bujuruldu*, together with the free disposal of a Kavas, and the promise of the necessary horses gratis. With the intention, under such favourable auspices, of going over the whole of the mountain chain from Secz to Bertiscus, I sent a Kiradji on horseback to Spalato for a fresh supply of paper. In the meantime, I made a good collection in the neighbourhood of Travnik, on the calcareous mountain of Vlassick; but after a four days' sojourn in these mountains, I was obliged to return to Travnik, on account of the itch which I had caught while bivouacking with the shepherds. In the very first excursion I made from Travnik, after the recovery of my health, and whilst awaiting my paper, on the 6th of July, I was attacked, without any provocation, by a Bosniak, named Osman, who fell upon me with his sword. Being unarmed, it was with the greatest difficulty I saved my life. On this occasion I received a wound, which then kept me twelve days in bed, and which now, after full two months, is not yet completely healed, and deprives me of the use of my right arm. To this misfortune was added, during my confinement, another event most untoward for the prosecution of my undertaking, the recall of Kiamil Pacha. Unable now to make any further collections during the remainder of the favourable season, and moreover, by the departure of the Vizier whose protection alone rendered my stay in Bosnia possible, being no longer in a position to reckon upon the continuance of my researches with any security, I found myself under the necessity of leaving Bosnia, and awaiting, in a more suitable locality, my cure, and the resolution of the question whether the new Governor, Tahir Pacha, would or would not, hereafter, extend his protection to me. So I reached Munich on the 29th of August.

---

* It is with great satisfaction we announce that we have received letters to-day (Jan. 13, 1848,) which mention the safe arrival of the Expedition on the 27th of September, at Giak, a town five days' journey from Leh, (or Ladakh), the Civil Capital, as Lassa is the Sacerdotal Capital, of Thibet.

"I am now expecting the arrival of my collections, which I intrusted to the commercial house of Brucher of Trieste, to forward to me, that I might, after the determination of my plants, distribute them to the subscribers, and draw up a detailed report of my journey, and of the physical aspect of the country. I have already taken the steps necessary for ascertaining the possibility of my renewing my researches in Bosnia next year.

"I have, indeed, the best hopes that I may be enabled to complete my journey in the way I could wish; but it is possible, also, that this may be denied to me. In the latter case, I shall not be in a position to furnish, to all my subscribers, the number of species which I had promised. I therefore request those who may not be satisfied with the share I shall be able to give them, or who may not consider that the misfortunes which have happened to me, can absolve me from the complete fulfilment of my engagements, to address me by letter, directed to the Botanical Garden of this place; in order that I may come to an understanding with them according to their views.

"OTTO SENDTNER."

"Munich, 8th of September, 1847."

Notice of MR. FENDLER'S *Botanical Journey to* SANTA FE, *in North Mexico.* (*Extract of a Letter addressed to Dr. Asa Gray, from Dr. Engelmann of St. Louis.*)

"Mr. Fendler has returned: he had not received any letter from me, or money, and was obliged to leave after having exhausted all his means, sold his gun, watch, &c. Living is very high there. He thought 400 dollars a-year was necessary, and more if farther excursions would have to be undertaken, mules hired,

&c. Mr. F. brought with him all his collections made since April, except living *Cacti* and seeds, which were to be sent after him, and have not yet arrived. The box with dried plants and barrel of *Cacti*, sent in April, are not come.

"All my leisure time has been devoted to assist him in arranging his collections: they are beautiful, the specimens mostly splendid, and a great many new things amongst them. But they are not well selected: of some he has collected eighty to one hundred specimens; of other, equally interesting ones, only five to ten or fifteen, when he might have gathered many more. It is not yet in my power to form an opinion about the number of specimens or species, but I hope he may be able to pay his expenses and the advances made to him, and have something besides, though that will not amount to much. What I see, is a proof of what could and ought to be done there.

"Nov. 14th.

"I have just written the above lines and will send them off without more delay. A few words about Fendler's collections. They are now nearly arranged and the specimens counted: his collections contain about one thousand species, but perhaps not more than three hundred with thirty or more specimens, many with only a single one. They were all in the greatest confusion; and it took a long time to arrange them, for sometimes the specimens of one species were in ten or fifteen different packages. So he has collected perhaps eighty or one hundred of one, and ten or fifteen only of another species; but the specimens are fine and mostly very complete. As soon as I have made the selection, I shall send the plants to you, and they must be worked upon rapidly, since Fendler is going to distribute them in the shortest possible time, and he is very much in want of money.

"You will do me a favour, therefore, if you will have a short notice published immediately here and in England, stating that Mr. A. Fendler has arrived in St. Louis with a rich botanical collection from near Santa Fè, and that he offers about ten sets of something like four or five hundred (perhaps more) species, ten more of about three hundred, and twenty more of 200 species, most of them in the best possible state of preservation, and well selected, a few being only incomplete (in some oaks, willows, &c.) ; that the price is ten dollars a hundred, transportation from St. Louis to be paid by the subscriber; and that a printed catalogue with description of new species will be sent to every subscriber, similar in every respect to Lindheimer's collection."

NELUMBIUM JAMAICENSE.

We have elsewhere ('Companion to the Botanical Magazine' for the present month) noticed the rediscovery of the *Nelumbium Jamaicense* in Jamaica, which had remained a *planta incognita* to all botanists since it was first found by Dr. Patrick Browne nearly a century ago. An excellent account, with plates, has been printed and privately circulated by our valued friend, Dr. M' Fadyen, of Kingston, Jamaica; and we are anxious to communicate this interesting fact to the readers of our Journal, and further to state, that so far as can be judged from the description and from beautifully dried specimens, the species is scarcely different from the *Nelumbium luteum* of the United States of America.

NOTICES OF BOOKS.

PRODROMUS *Systematis Naturalis Regni Vegetabilis*; *Auctore* A. DE CANDOLLE.

IT is no trifling privilege to be able to commence a new year and the first number of the present volume, with the announcement of the Eleventh part of the inestimable Prodromus of De Candolle, continued, since the death of the lamented parent, by his son, Alphonse De Candolle. This part, or volume, as it really is, includes five families of plants, than which none more needed a thorough revision, the *Orobancheæ, Acanthaceæ, Phrymaceæ, Verbenaceæ,* and *Myoporaceæ.* And to satisfy the public that these respective families have been intrusted to good hands, we need only say that *Orobancheæ* has been executed by M. Reuter; *Acanthaceæ* by Dr. and Professor Nees von Esenbeck;* and the *Phrymaceæ* and *Verbenaceæ* families by Dr. Schauer, so well known for his 'Memoir on the *Myrtaceæ*;' and the *Myoporaceæ* by M. De Candolle. The *Orobancheæ* are divided into twelve already established genera; the *Acanthaceæ* ("magno specierum numero inter tropicos totius orbis luxuriantes, in regionibus subtropicis multo rariores, in hemisphærio boreali vix ultra 15°, in australi non ultra 12° isotherm. reperiuntur") into two suborders, eleven tribes, and no less than one hundred and fifty-four genera. *Phrymaceæ* have only one genus and one species, found both in the Old and in the New World. *Verbenaceæ,* to which we are happy to find most of the *Vitices* of Jussieu united, are grouped into three tribes, and the two former of them into ten subtribes, the whole embracing forty-two genera. The last family in the volume, *Myoporaceæ* (chiefly of Australian origin), includes twelve genera.

We have reason to know that the 12th Part, or volume, is in a state of great forwardness, and that the *Labiatæ* are prepared by Mr. Bentham, the *Plumbagineæ* by M. Boissier, and the *Chenopodiaceæ, Phytolacceæ,* and *Amaranthaceæ* by M. Moquin-Tandon.

HISTORY of BARBADOS; *comprising a geographical and statistical description, &c., &c., and an account of the Geology and Natural Productions.* By SIR ROBERT H. SCHOMBURGK. London: Longman and Co. 1848.

This indefatigable and distinguished Traveller and Naturalist could not visit the small Island of Barbados, without bringing home materials for a History of the country, which are here given in a handsome Royal 8vo volume, with some well executed plates.

---

* We may here observe that the Professor, in quoting the name of *Burke* in Sir William Hooker's Herbarium, has mistaken it for an abbreviation of *Burchell.*

"During my sojourn," he says, "I saw much that excited my interest in a scientific point of view, and much that I admired in its social condition and political economy; all this, combined with the wish I felt during my wanderings to carry away with me a lasting recollection of what I witnessed, have been the principal motives for the present undertaking." This talented Naturalist devoted much time and attention to the vegetable productions of Barbados: it was, he observes, "a favourite plan of mine to treat the Botany of the island in a more detailed manner, and in place of the usual dry scientific descriptions, to give a popular account of the plants, their uses and their properties. My preparations," he proceeds, "had been already far advanced, and the first sheet was printed, when I found that a continuation in that manner would alone fill about twenty sheets; and I was reluctantly obliged to abstain from a task which I considered one of the most delightful, connected with my projected work. Still I trust that if the subscribers, satisfied with the execution of the History, give me their further assistance, I may execute my original plan, and publish a Flora of Barbados as a sequel to this work." We will hope that the learned author may one day accomplish his scheme. We must not suppose, however, that Botany has been entirely neglected in the present volume: there is a full and closely printed chapter of sixty-two pages, devoted to the Flora of the island, and to introductory remarks on its vegetable productions generally. The catalogue of the flowering plants in the island amounts to eight hundred and ninety-six species; but this includes the kinds cultivated or introduced from other countries, as well as those which are indigenous; and this is of no small importance, as showing what may be introduced advantageously to the colony. Many notes are given worthy of extract, connected with imported plants. The famous Guinea-grass, *Panicum jumentorum*, we here learn was raised in the West Indies in 1744 (more than a century ago), by some seed brought from the coast of Guinea. Eleven kinds of Sugar-Cane, introduced from various parts of the Old and New World, are in cultivation. Eleven Palms are enumerated, most of them imported. Of the *Ficus nitida,* Thunb. (an East Indian Fig), there are two trees at the quarters of the Commander of the Royal Artillery : the extent of the branches of the larger one is ninety-four feet, that of the two, one hundred and twenty-four; and both (we presume standing close together) cover a space of 11,000 square feet. The Mammee Tree (*Mammea Americana*), Abricotier des Antilles of the French, here attains a great size: in the garden at Halton are two trees, the largest sixteen and a half, and the other fifteen feet four inches, in the girth of the trunk four feet from the ground. Lastly, we shall only mention the Mahogany and the Teak, both introduced trees, and both, as is shown by Sir Robert Schomburgk, well worthy of extensive planting. The late Sir P. Gibbs, when a young man, planted a seed of the Mahogany on the estate of Springhead: it was cut down previous to his death, when only fifty years old, and after retaining several pieces of the wood for his own use, the remainder of the tree was sold for 100*l.* currency. The late Judge Lucas planted a Teak (*Tectona grandis*) on the estate of Sunbury, in 1799. In 1803, it was upwards of twenty-five feet high, and five inches in the diameter of its trunk at six feet from the ground. In 1831, it was blown down by a hurricane, and still remains in its prostrate state, but living and luxuriant; and in that condition, in 1846, its trunk was thirty-four feet in length, and its girth five and a half feet, at six feet from the ground.

NEREIS AUSTRALIS; *or* ALGÆ *of the Southern Ocean: being figures and descriptions of* Marine Plants *collected on the shores of the Cape of Good Hope, the extra-tropical Australian Colonies, Tasmania, New Zealand, and the Antarctic regions, deposited in the Herbarium of the Dublin University. By* WILLIAM HENRY HARVEY, M.D., &c. London: Reeve, Benham, and Reeve. 1847.

Of this most important contribution to our knowledge of exotic Algæ, we know not if we can pay it a higher compliment than by saying it is worthy of the author. All that we have stated in favour of the *Phycologia Britannica* is applicable to this, which has still higher merits; for as here, too, the author is not only the draughtsman, but also the lithographer, so, as may reasonably be expected, his experience as an artist has occasioned corresponding improvement in the style and execution of the plates; while the publishers, Messrs. Reeve, have, on their parts, spared neither expense nor pains to issue the work in a style corresponding to its deserts. The portion before us is Part I., containing twenty-five exquisitely beautiful plates, as to subjects, execution, and colouring, at the very moderate price of 21s. The Preface, besides explaining the source whence the author derives the rare and graceful species destined for the work, gives the best and the most simple information for collecting and drying these charming marine productions. Then follows an admirable sketch of the nature of these productions, of their affinities, whether as relates to the vegetable or animal kingdom, and their limits. This part of the subject is handled with great tact and clearness, and we cannot forbear extracting the passage relating to that remarkable vegetable production, the simplest, perhaps, of any in its organization, the *Red Snow*. "Linnæus," says Dr. Harvey, "and afterwards Jussieu, comprised, under the term Algæ, two closely allied and very extensive classes of Cryptogamic vegetables, the *Sea-weeds*, or submerged *Algæ*, and the *Lichens*, or aerial. The more accurate observation of these simple plants, in modern times, has led to the separation of the Lichens into a distinct class, in some respects collateral with the submerged Algæ, but probably, though degraded in its lower members, entitled to a higher rank in the scale of organic being than its more showy rival. The humbler individuals of the Lichen races do, indeed, appear among the first vegetable organisms, which develop themselves on the surfaces of naked rocks, whereon, by their alternate growth and decay, they afford the earliest obvious deposit of a vegetable soil. They doubtless precede the *Fungi* in their attacks on the living tissue of higher vegetables, and thus they would seem to hold the very lowest place in the scale of creation. But the eternal snows of lofty mountains, far above the limits even of Lichens, are 'the nurse and mother' of the simplest *Algæ*, by the decay of whose fronds, (the invisible detritus being, perhaps, carried down with the melting snow,) a vegetable soil is furnished for those very Lichens which claim to occupy a prior station in the scale of existence. Whether the *Protococcus* of the snow be justly entitled to its name, or whether it is in like manner dependent on a yet earlier organism, it is impossible for us to decide: with our present amount of knowledge, it appears to be the simplest of all vegetables; and still, from its microscopic minuteness, we can trace upwards, in one unbroken chain of affinity, a series of analogous structures, gradually becoming more complex, which link it in close relationship with the great *Algæ* of the Southern Ocean, one of whose enormous fronds is more than a sufficient load for a man. The *Protococcus*, assuredly, bears a striking resemblance, in structure and aspect, to the spore of one of the larger *Algæ*; and a hasty observer might pronounce it to be nothing else than a spore, arrested in its progress by the ungenial soil and climate around it, but which, if placed in favourable circumstances, would gradually advance to a higher organization. Such a conclusion is not warranted by facts; for, though this plant was originally detected on the snow of the Alps, and afterwards observed in similar situations on the Andes, and within the Polar circle, it is yet by no means confined to snow: it occurs on rocks, down to nearly the level of the sea, in a great variety of climates, and still preserves, throughout this wide discrepancy of 'modifying causes,' an identity of structure, becoming neither more nor less complex. It is excessively common in Europe, on the surface of rocks, (not exclusively on limestone, as has been affirmed,) wherever water frequently lodges in depressions; and I have seen it in such situations, at the Cape of Good Hope, where snow never lies, and very rarely falls. Without presuming, therefore, to assert that the *Protococcus* admits of no higher development, we may be allowed to remark that our present knowledge of this humble plant invalidates, in nought, the fundamental law of organic nature; viz.,—that every living thing, plant or animal, has received, at its creation, a certain charter of rights, within which it and its progeny may range, but which they cannot overpass. The theories of advancing development, or transfusion of species, so frequently started in modern times, receive no confirmation in the case of the *Protococcus*; nor in any other instance, where the evidence has been carefully investigated."

The first part is devoted to the group of *Rhodomeleæ*, (so called from *ροδεος, red, μελας, black,* from the almost universal fact of the plants changing, in drying, from red to dark brown, or even black,) and an interesting account is given of their geographical distribution. It should be observed that the work is not a selection of certain species, but an arranged system of all that is known of Australian *Algæ*, accompanied by figures of the new and rare ones, especially of those most remakable for beauty of form or colour.

We cannot conclude our brief notice of this work without remarking that the *Phycologia Britannica* has now extended to twenty-five numbers, and reflects, as we foretold it would do, the highest credit on the author.

Dr. Hooker's Flora Antarctica; *or the Botany of the* Antarctic Regions, *explored by H.M. Discovery Ships, Erebus and Terror, in* 1839–1843, *under the command of Captain Sir James Clark Ross, R.N.* London: Reeve, Benham, and Reeve. 1847.

This important work is brought to a close in two quarto volumes, with one hundred and ninety-eight plates, and the requisite accompanying descriptive matter. The other portions of the botany of this voyage, namely the Flora of Van Diemen's Land, and the Flora of New Zealand, for which considerable preparations are made, will be delayed till the return of the author from his present mission to Northern India, and to Borneo. Many of the new species from those countries have recently been published in the late numbers of the present Journal; and there is every reason to believe that numerous additions will soon be made to what is already known of the vegetation of those important islands, by the continuous exertions of Ronald Gunn, Esq. in Tasmania, and of the Rev. W. Colenso in New Zealand. We announce, too, with great satisfaction, that Captain Stokes, R.N. is on the point of leaving England in H.M. war-steamer Acheron, for the shores of New Zealand; and that he possesses the means and the inclination to carry out botanical researches in the hitherto almost unknown regions of the middle and southern islands, by which science cannot fail to be deeply benefitted.

DARLINGTON'S AGRICULTURAL BOTANY; *or an Enumeration and Description of useful Plants and the Weeds which merit the notice and require the attention of American Agriculturists. By* WILLIAM DARLINGTON, M.D. Philadelphia, 1847.

The amiable author of this work is already favourably known to science, both in England and in the United States, by his 'Flora Cestrensis' and other botanical writings. He has here brought his knowledge and experience to bear on the tillage of the soil in the United States, and has rendered much service to the cause of agriculture there. An excellent Preface explains the importance of a knowledge of plants to the cultivator of the earth, especially of such as are useful to man and beast, and such as are useless or injurious, and consequently require to be eradicated. All these are clearly and fully described, and their properties given, together with much useful and interesting matter, collected from a vast variety of sources. The whole is arranged in the body of the work, according to the Natural System, and a key to the Artificial System is also subjoined. At the close of the work we find the following very useful catalogues, with numbers referring to the pages where these plants are described :—

1. Plants yielding esculent roots, herbage, or fruits for man.
2. Plants yielding food, exclusively or chiefly for domestic animals.
3. Plants yielding condiments and drinks.
4. Medicinal plants.
5. Plants employed in the arts, in commerce, in domestic or rural economy.

6. Pernicious and troublesome plants; (with the *eminently* pernicious ones distinguished from the rest;) and
7. Plants which are chiefly mere weeds upon farms, and ought to be expelled, or superseded by more useful ones.

From this catalogue alone, it will be seen how extended is its scope to others besides agriculturalists, and we can safely say it is a work as much called for in England, as it can be on the other side of the Atlantic. It constitutes a closely printed 12mo volume of two or three hundred pages.

Experimental Inquiry into the cause of the ASCENT and DESCENT OF THE SAP, *with some observations on the nutrition of Plants,* and the cause of ENDOSMOSE and EXOSMOSE, with plates; by G. RAINEY, M.R.C.S.E., &c. London: Pamplin, 1847.

This little book well deserves an attentive study. It is the result of Experiments, carried on by the author during, and since, the year 1840; and a short account of some of them was communicated to the Royal Society in 1842. His mode of experimenting, and the opinions he has thence deduced, are detailed in the present Essay. The importance of the subjects may be judged of by the titles of the several paragraphs.—Ascending or crude Sap. Elaborated Sap. Direction taken by the Sap. Cyclosis. Structure through which the sap moves first to be determined. Object of the Experiments instituted. Sap not propelled. Some Plants unsuited for Experiments. Ascent of Sap due to a vital process in the leaves. Structure through which the crude Sap ascends. Intercellular tissue, its position and variation in different plants, and its character. Cause of the ascent of Sap; its lateral diffusion. Effects of Transpiration. Experiments confirmatory of the explanation why crude Sap ascends. Effects of a solution of sugar upon plants. Crude Sap attracted, not propelled. Supposed effects of Endosmose. Use of the Pith. Descent of the elaborated Sap. Experiments to determine the passages conveying the elaborated Sap, observations and deductions from the Experiments. Independence of the different layers of wood, and connexion of each with the Roots. Vessels alone convey the elaborated Sap. Openings of communication in Spiral Vessels. Method of demonstrating Spiral Vessels in Leaves and Petals. Arrangement of Spiral Vessels. Vascular connexion of the Petioles of Leaves with the Stem. Formation of Ducts and Spiral Vessels from Cells. Longitudinal marking of Ducts and Spiral Vessels. Changes effected during the transformation of Cells. Breaking up of Cells. Inference as to the functions of Vessels. Passage of elaborated Sap along the Vessels of the Petiole, &c. Mechanical action of the Spiral Vessels. Deductions from experiments regarding the office of the Leaves, &c. First direction of the Elaborated Sap; its ascent. Cause of Death by Ligature. Escape of Fluid from Trees wounded during spring, and its cessation. Dutrochet's explanation of the cause why Sap ascends. Analogy of Starch in Plants to Fat in Animals. Nutrition of Plants, and passages by which the nutritious matter is conducted; with experiments and observations. Disappearance of Starch in Vegetables. Analogy to Animal Nutrition. Wood of *Coniferæ*. Cause of Endosmose and Exosmose, and characteristic properties of each. Cause of Accumulation. Explanation applicable to Fluids, possessing different chemical properties. Endosmose and Exosmose referable to Attraction.

The plates, two in number, are well executed, and the descriptive matter clearly expressed, and evidently the composition of a Naturalist anxious to make accurate investigations. The "Inquiry" cannot fail to be considered an important addition to Physiological Botany, a study yet in its infancy.

HEPATICÆ BRITANNICÆ; *or Pocket Herbarium of* British Hepaticæ, *named and arranged according to the most improved system*; *by* WILLIAM GRAHAM M'IVOR, Royal Gardens, Kew.

On more than one occasion, in the volumes of our Journal, we have borne testimony to the usefulness of published and correctly named *specimens*, especially of Cryptogamic Plants; and they are doubly useful when given in the form of a Pocket-Book, or Pocket Herbarium ("Taschenherbarium" of the Germans), like the "*Deutschland Moose*" of P. C. Funck, and the "*Musci Britannici*" of our friend, Mr. Gardner. On the plan of those exquisitely beautiful models the present work has been formed; and it is not a whit behind them in the perfectness of the specimens, in completeness of the number of species, and correctness of the nomenclature. The *Hepaticæ* are here divided into thirty-nine genera; the number of species in the copy before us is one hundred and thirty-five, (including a few well marked varieties,) and the volume is offered at the moderate price of 21s. With the most indefatigable industry Mr. M' Ivor has collected, with his own hands, in England and in Scotland, most of the species here given, and has made exchanges with other botanists, so as to obtain certain rare species which he has not had the good fortune to gather; and thus he is enabled to render the work more complete than it could otherwise be.

It is probable that Cryptogamic and other Botanists will not derive so much advantage from the publication of this work as might be expected, were the author to continue in this country, and have the opportunity of preparing a greater number of copies than his limited time and means have allowed. Still, it is a subject for congratulation that so enthusiastic and intelligent an Horticulturist and Botanist is charged, by the Honourable the Court of Directors of the East India Company, with the formation and management of a Botanical Garden in the Neelgherry Hills of the Madras Presidency. Mr. M' Ivor will embark for his new office in a few weeks; and the copies of the "*Hepaticæ Britannicæ*" remaining unsold, will be left with Mr. James Crammond, at the Royal Botanical Gardens, Kew, where application may be made for the work.

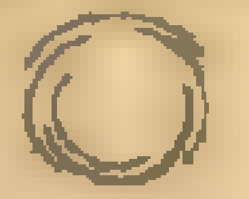
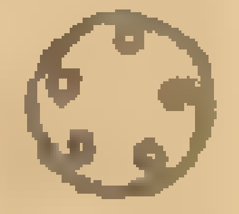
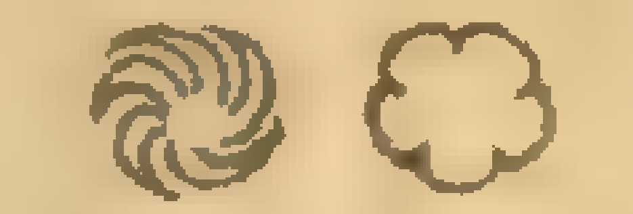
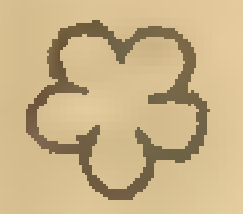
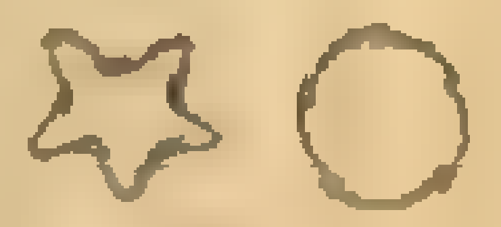
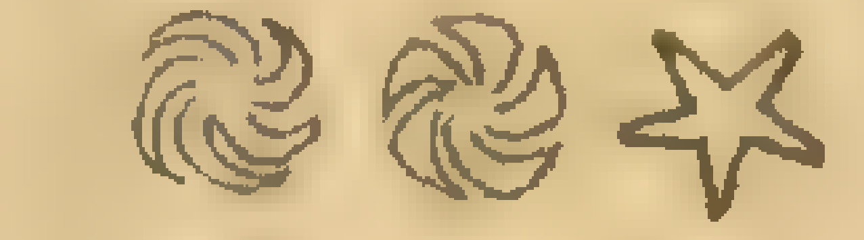
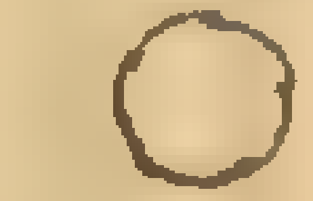
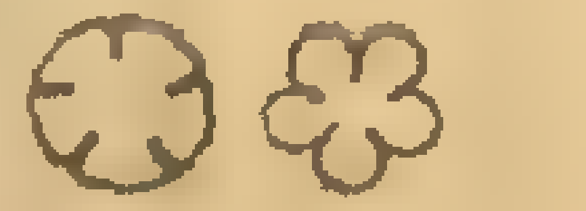
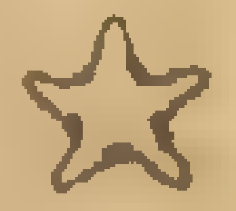
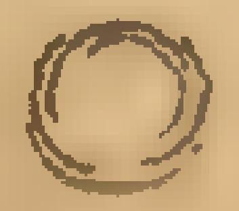
Contributions to the Botany of SOUTH AMERICA; *by* JOHN MIERS, ESQ., F.R.S., F.L.S., &c.

(*Continued from* p. 26.)

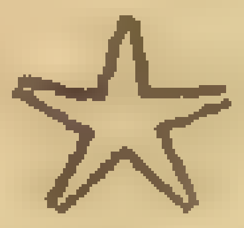
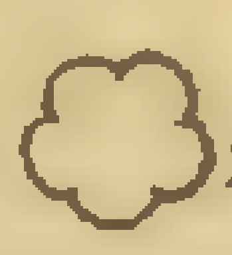
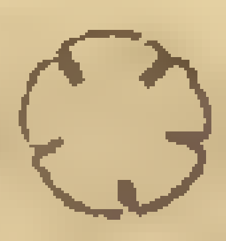
It is evident, from the foregoing facts, that *Sclerophylax* cannot be referred to any known Natural Order, and it is, therefore, essential to find some place for it in the system. Some objections may be made to the establishment of a distinct order upon a solitary genus; but we have at present no less than twelve natural families among phanerogamous plants, each based upon a single genus. Even *Nolana* was in a similar position, with only seven species, when the family of the *Nolanaceæ* was first proposed in 1833: the subsequent collections of Cuming and Bridges have increased the number of genera to six, and the amount of species to thirty. Under these circumstances, I have less hesitation in offering the genus under consideration, as the type of a distinct family, under the name of *Sclerophylaceæ*; and accordingly, I proceed to suggest the position it will probably occupy in the natural system, an inference derived from the comparison of its leading characters with those of the various families to which it can claim the smallest relation.

In the following tabular view, the various orders there enumerated, which form a very natural circle, bound together by many common ties, are placed in juxtaposition according to the number of the stamens, the æstivation of the corolla, the number and direction of the ovules, and the relative position of the embryo. This selection of characters may not be the most appropriate with a view to methodical arrangement, and is not offered with any such intention; but it answers our present purpose of determining, by such artificial means, the most fitting position in the system for *Sclerophylax*, which on account of its apparently anomalous structure, does not at first sight fall into any distinct place, and can hardly be attached as a suborder to any of the families here enumerated. This table, founded upon such artificial characters, appears to indicate by a gradual transition, a chain, nearly as perfect as any linear distribution, based upon more methodical principles, can be expected to exhibit, and certainly it does not materially differ from the most approved arrangement after the method of Jussieu.

Flowers with a gamopetalous hypogynous corolla, and one or more superior ovaries with 1, 2, or 4 cells in each, never 3 or 5; placentæ never parietal; when the cells are 2, one is always posterior, the other anterior with respect to the axis of inflorescence. They consist of the class *Nuculiferæ*, and part of *Tubifloræ*, Endl.

Orders.	Stamens.	Æstivation of corolla.	Ovules.		Radicle in regard to hilum—to base of fruit.	
Labiatæ	4	 imbricate	1 in each cell	erect	inferior	inferior
Boraginaceæ	5	 border below plicate, above, cortortu-imbricate			superior	superior
Cordiaceæ				suspended		
Heliotropiaceæ		 border, below plicate, lobes conduplicate and plicato-valvate				
Ehretiaceæ						
Sclerophylaceæ		 lobes, induplicato-valvate				
Grabowskyeæ		 tube subplicate—lobes often conduplicate—margins always contortu-imbricate		erect	inferior	inferior
Nolanaceæ						
Dichondreæ			1 or 2 in each cell			
Convolvulaceæ		 lobe conduplicate--conduplicato-valvate and twisted, or reduplicato-valvate and straight				
Erycibeæ			4 in a single cell			
Cuscutaceæ		 almost valvate	2 in each cell			
Stilbaceæ		induplicato-valvate or plicato-valvate	1 in each cell			
Cestraceæ				horizontal		centripetal
Solanaceæ			several in each cell			
Nicotianeæ		 plicato-imbricate				
Salpiglossideæ						
Scrophulariaceæ	4	 imbricate				
Selaginaceæ			1 in each cell	suspended		inferior
Verbenaceæ						
Avicennieæ			1, 2, or 4 in each cell			
Myoporaceæ					superior	superior

CYPHOCARPUS.

The discovery of a plant possessed of many abnormal characters, is always more interesting to the Botanist, than the detection of a new genus, marked by features that only serve to fill up an ordinary link in the chain of some well-recognized family. The plant under consideration will be seen to be extremely anomalous and curious in its structure. It was collected in Chili by Bridges, and exists in the Herbarium of Sir William Hooker, who, with his accustomed liberality, had the kindness to offer it to me for examination. It evidently belongs to the class *Epicorollia*, or rather the *Campanuleæ* of Jussieu, according with the *Campanulaceæ*, *Lobeliaceæ*, *Goodenoviaceæ*, *Cyphiaceæ*, and *Stylidiaceæ*, in having an epigynous corolla and stamens alternate with its lobes: the insertion of the stamens, however, is not epigynous, as in all these families, but decidedly perigynous, originating in the middle of the tube of the corolla. It corresponds also with the four last-mentioned orders, in the corolla having an irregular border, but it is not divided into distinct petals: its tube is not cleft on one side to the base; nor are the stamens in any degree syngenesious, as always occurs, at least, in the *Lobeliaceæ*. From the *Goodenoviaceæ*, it differs in the æstivation of the corolla; for, in that order, the broadly-winged margins of each lobe respectively are involutely imbricated upon one another,* while in *Cyphocarpus* the margins are irrespectively induplicate with those of the contiguous lobes and valvate with them: these lobes, too, are of one equally thin membranaceous texture, not thickened in the middle as if another narrower petal were glued upon the back; it must not be forgotten, however, that the hooded portion of the upper lip of *Cyphocarpus*, more or less partakes of this character. In regard to æstivation, the approach to the *Lobeliaceæ* and the *Campanulaceæ*, is equally evident, in which latter family, although replicately valvate in *Specularia* , it is more generally plicately valvate, as in *Campanula* , a form sometimes scarcely distinguishable from the induplicato-valvate  mode of æstivation seen in *Cyphocarpus*. In the structure of its ovarium, it resembles at the period of its first growth, that usually seen in most of the genera of the *Campanal* alliance: it is two-celled, with numerous ascending ovules arranged about the axis, on each side of a narrow central placentary line; but the dissepiment consists of an extremely delicate membrane, which at an early stage begins to shrink from the walls of the ovarium, and soon evanesces entirely, leaving a unilocular cell, with a linear, central, free placenta, about which the ovules are crowded, and become perfected. This placenta is very narrow, and although thicker than the dissepiment, is still membranaceous, being marked by six very fine parallel ovuligerous nerves, arranged in threes, and leaving a broader intermediate space, which is sometimes, but not always, cleft for a short distance in the middle: this shows an evident tendency towards the placentation of the *Lysipomeæ*, especially through the genus *Hypsela*, of Presl. I am not aware of the existence of a similar structure in any genus of this alliance. It differs also from all the orders before mentioned, in the peculiar form of its corolla, which is quite monopetalous and bilabiate, one of the lips of its border being galeate, with winged margins, and surmounted by a single terminal, delicate, oblong lobe, while the other lip is furnished internally with a prominent ringent palate, and has four distinct, terminal, oblong lobes, of delicate texture, like that of the other lip; these five lobes have all the same common induplicate æstivation. The style is quite glabrous, and declinate at the summit, and the stigma is deficient of the singular indusium of the *Goodenoviaceæ*, although it has a few external setose hairs, as in the *Campanulaceæ*; it is subsequently glabrous, bilabiate, with fleshy reflexed lobes, and a small gland in the sinus; indeed, it

---

* This is a distinction deserving of some notice. Endlicher, in his character of the *Goodenoviaceæ*, (Gen. Pl. p. 506) defines this by saying "lobis æstivatione induplicatis," which conveys a very incorrect notion of this peculiar manner of præfloration, especially if we confine that expression to the limit given to it by Prof. Lindley in his Intr. Bot. 411, fig. 6. Mr. Robert Brown, who founded the order, expresses this feature in far more exact terms, viz., "lateribus æstivatione induplicatis" (Prod. 573); but it appears to me, it would be still more correctly defined by the following amplification: "marginibus æstivatione inter se involuto-plicatis, plicaturis valvatim clausis."

greatly resembles that of *Petunia,* and is much like the development of the stigma, which I have sometimes seen in the Chili variety of *Wahlenbergia linarioides.* It has an entire, small, annular, fleshy, epigynous ring, surrounding the base of the style, as in the *Lobeliaceæ.* Its seeds are neither lenticulate, nor winged, but oval and striated, with a somewhat scrobiculate and reticulated testa. Its general habit is very peculiar, being somewhat herbaceous, of an arid appearance when dried, with small radical rigid leaves, having sharp spinose teeth, while its cauline leaves are ternate, involucrating, and surrounding the base of a solitary sessile flower in each alternate axil, the two lateral ones being actually inserted upon the ovarium; these resemble in form the persistent segments of the calyx, being linear and rigid, with a few somewhat retrorse teeth on the margin, which are hard and spinescent, and sometimes double. In the ascendant position of its ovules, and in the form and direction of the embryo, it resembles all the other orders of the Campanal alliance.

It must be evident from the above facts, that the affinity of *Cyphocarpus* is unquestionably with the class of the *Campanulineæ,* but it cannot obtain a tenable place in any of the five orders composing that class,[*] for which reason I would rather suggest the propriety of giving it a distinct station, and making it the type of an aberrant group, of which, probably, many others remain to be discovered, or may now, perhaps, be found in existing herbaria. It certainly borders closely upon *Campanulaceæ,* through *Prismatocarpus*; upon *Lobeliaceæ,*[†] through *Grammatotheca, Clintonia,* and *Lysopomia*; upon *Cyphiaceæ,* through the genus *Cyphielal* of Presl, which has a gamopetalous corolla; and upon *Goodenoviaceæ,* through the section *Ochrosanthes* of *Goodenia.*

---

[*] If in any place, it would certainly stand as a third tribe of the *Campanulaceæ,* but in an instance like the above, where a plant osculates closely upon several different orders and cannot be arranged in any one of them, without breaking down the few limits of demarcation between very natural families, it appears to me less objectionable to classify it under a distinct title, as a separate group, than to force it into an unnatural position. This genus may therefore remain for the present, as the nucleus of a suborder, attached to the class *Campanulineæ,* after the example of the *Sphenocleaceæ,* until other analogous plants be detected, that may claim for the *Cyphocarpaceæ* its due place, as a recognized family in the Natural System.

[†] I have noticed in many of the Cape species of *Lobelia* a very distinctly gibbous palate, similar to that described in *Cyphocarpus*; but strange to say, I can find nowhere, either in the descriptions, or in the figures of any botanical work, any

The generic name of *Cyphocarpus,* now proposed for this plant, is derived from κυφος, *incurvus,* and καρπος, *fructus,* on account of the gibbous form of its enlarged capsular fruit.

The following is an outline of its generic character:—

Cyphocarpus. (gen. nov.)—*Calyx* oblongus, ovario adnatus, limbo supero, persistenti, breviter tubuloso, profunde 5-fido, laciniis erectis, subinæqualibus, linearibus, retrorsim mucronato-dentatis, rigidis, fructifer demum auctus. *Corolla* persistens, insertione epigyna, longe tubulosa, tubo cylindrico pentagono, angulis hispidulis, limbo bilabiato tubo duplo breviore; labio superiore galeato, textura crassiori, (excepto nervo dorsali) glabro, colorato, marginibus alatis tenuibus, lobo unico oblongo superato; labio inferiore, imo in palatum gibbosum plicato, plicis 3 linearibus intus prominentibus, apice usque ad medium in lobis 4 oblongis partito; lobis omnibus 5 textura delicatula æqualibus, æstivatione induplicatis. *Stamina* 5, æqualia, inclusa, supra medium tubi inserta, limbi laciniis alterna: *filamenta* gracilia, dilatata, medio nervulo centrali barbata: *antheræ* lineares, filamentorum longitudinis, basifixæ, 2-loculares, loculis collateralibus, margine rima longitudinali dehiscentibus. *Pollen* globosum, simplex. *Ovarium* inferum, cylindraceum, sub-5-gonum, membranaceum, 2-loculare, loculis uno antico, altero postico, dissepimento membranaceo, tenuissimo, medio placentifero, a parietibus cito soluto et evanido, placenta centrali tunc omnino libera, revere deinde unilocnlare: ovulis plurimis adscendentibus. *Stylus* filiformis, tubo corollæ paulo longiusculus, omnino glaber, apice sub galea reflexus, basi annulo brevi integro carnoso cinctus. *Stigma* capitato-bilobum, lobis crassis, in alabastro clausis et extus setosis, demum reflexis, glabris, in sinu glandula centrali viscosa instructum. *Capsula* cylindrica, conica, striata, postice gibboso-ventricosa, corolla calycisque

allusion to the existence of so prominent a feature. I have also observed in some species of *Lobelia,* that the insertion of the stamens is decidedly perigynous, that is to say, upon the tube of the corolla, a little above its base, not epigynous, as generally described.

laciniis foliaceis persistentibus coronata, unilocularis, subfollicularis, vel sutura longitudinali postice dehiscens, placenta nunc omnino soluta, in tæniam angustissimam centralem liberam seminigeram (rarius medio fissam) cum stylo persistenti continua. *Semina* plurima (circiter 40), patentia vel suspicientia, breviter stipitellata, ovata; *testa* longitudinaliter costata, reticulato-scrobiculata, apice chalaza subobsoleta notata; *albumen* carnosum: *embryo* axilis, teres, fere orthotropus, radicula terete, infera, hilo spectanti, cotyledonibus ovalibus paulo latioribus, multoties longiore.

Herba Chilensis *rigida, per totam scabrido-pilosula,* caulibus *perpaucis, e collo ramosis, erectis.* Folia *fere radicalia, oblonga, acuminata, basi in petiolum decurrentia, enervia, grosse spinoso-dentata*: folia caulina, *terna, æqualia, sessilia, quarum* 2 *lateralia* (bracteæ) *e basi ovarii utrinque orta, rigida, linearia, spinoso-dentata, florem solitariam sessilem involucrantia, persistentia*; *caulibus tunc* in inflorescentiam *quasi spicatam redactis.*

1. Cyphocarpus *rigescens*: foliis radicalibus oblongis, grosse dentatis, dentibus mucronato-spinulosis rachi marginibusque cartilagineis, rigidis, in petiolum decurrentibus, mox caducis, caulinis bracteisque consimilibus linearibus, laciniisque calycinis runcinato-dentatis, rigidissimis, persistentibus; ramulis subspicatis, subflexuosis, e basi ortis, adscendentibus. Chili (Coquimbo): *v. s. in herb. Hooker et Mus. Brit.* (Bridges, n. 1293.)

This curious plant seems to be quite herbaceous in its habit, although of arid and harsh appearance: its root is long, slender, and tapering: it branches from towards its base into a few nearly erect, somewhat flexuose floriferous stems about a foot high, bearing a single flower in each axil. The radical leaves, including the petiole, are eleven lines long, and three broad: the floral leaves and bracts are nine lines long, and about a line broad: the calycine leaflets in flower, are four lines long, and scarcely a line broad, but they increase in length to six lines upon the ripened and enlarged capsule: the inferior ovarium is three lines, and the superior corolla six lines long; this is persistent, although the border becomes shrivelled; it is, apparently, of a bluish hue, but

the upper galeate lip is of a deep crimson colour, and the palate of the opposite lip seems of a roseate tinge, judging at least from the appearance of the flower when moistened after being dried: externally it is quite smooth in bud, but the flower, at maturity, is covered with a very short, dense, echinate, rigid pubescence, with which, indeed, the whole plant, under the lens, will be found to be more or less invested: the crimson galeate lip of the corolla, with the exception of the dorsal nerve, is, however, quite glabrous.

(*To be continued.*) p 333

Prodromus Monographiæ FICUUM; *scripsit* F. A. G. MIQUEL, Botanices Professor Amstelodamensis.

(TAB. II.)

(*Continued from Vol VI. page* 588.)

II. PHARMACOSYCEA.

Flores in *receptaculo* globoso monoici bracteolati. *Masc.* præsertim superiores, *perigonio* (fusco) coriaceo 4-phyllo, phyllis concavis imbricatis in pedicellum longum vel abbreviatum coeuntibus. *Stamina* 2, cum vel absque *pistilli rudimento, filamentis* brevibus, *antheris* oblongis, loculis connectivo antice adnatis. *Fœm. perigonio* 4-6-phyllo, phyllis linearibus. *Ovarium* sessile, *stylo* brevi. *Stigmate* bi-vel unicruri, cruribus lanceolatis muriculatis sæpe introrse sulcatis. *Achenia* crustacea.—

Species *Austro-Americanæ* arboreæ vel frutescentes, glabræ vel scabrido-puberulæ, *foliis* oblongis integerrimis costiveniis, *receptaculis* axillaribus pedunculatis vel sessilibus geminis vel solitariis globosis apice bracteis parvis clausis basi *involucro* trilobo sustentis, *succo* vulgo acri.—Ab *Urostigmate,* cui habitu accedit, florum structura valde differt.

1. Pharmacosycea *Radula*. (Ficus Radula, *Willd. vol.* x. p. 1144. *H. B. K. Nov. gen.* ii. p. 47. F. anthelminthica, *Rich. MSS. in DC. Essai méd. des pl.* p. 267. *verisimiliter.*) Ramis glabris fuscescentibus, ramulis petiolis foliisque subtus sparse recep-

taculis confertius scabriusculo-puberulis glabrescentibus, foliis oblongis ellipticis vel ovato-oblongis utrinque acutiusculis vel obtusiusculis supra asperiuscule punctulatis, venis horizontalibus distinctioribus costulatis utrinque circiter 10–12, stipulis lanceolatis elongatis tereti-convolutis, receptaculis solitariis (an semper) breviter pedunculatis, involucro dein circumscisso. (TAB. II. B.)

HAB. Brasiliam (*Schott.*) In districtu Paranogoa, Prov. Piauhy; Aug., 1839. (*Gardner, n.* 2730, *in Hb. Hook.*)

Arbor magna? Nodi ramulorum stipularum cicatrice marginati. *Petioli* semiteretes antice sulcati fuscescentes. *Folia* coriacea rigida, basi subtrinervia, costulis subtus prominentibus pallidis ante marginem arcubus tenuibus junctis, 12–14 cent. longa, 5½ lata. *Stipula* lanceolata acuminata convoluta, imo dorso puberula, cæterum glabra, 4 cent. longa. *Receptacula* cerasi nunc fere magnitudinis, puberula vix scabriuscula, basi in *stipitem* brevissimum constricta, *pedunculo* ipso ½ cent. circiter longo, apice *bracteis* exiguis imbricatis latis glabris clausa, intus sub ore bracteis obturata, cæterum foveis exsculpta floriferis, inter quas *bracteolæ* fuscæ coriaceæ. *Fl. fœm.* magno numero obvii, *perigonio* 6-phyllo, phyllis basi liberis vel in brevem pedicellum conjunctis linearibus concavis ciliatis. *Ovarium* gynophoro vix ullo sustentum obovatum, *stylo* laterali, *stigmate* vel caudato muriculato vel subbicruri. *Achenia* matura crustacea albida, punctulis fuscis inspersa. *Masc.* superiores, *perigonio* 4-partito, lobis spathulatis apice obtuso concavis incurvis imbricatis subciliolatis, basi sæpius in pedicellum puberulum conjunctis. *Stamina* 2 opposita, perigonii duobus phyllis opposita, ima basi iis subadhærentia, *filamentis* semiteretibus fuscis brevibus, *antheris* oblongis bilocularibus, loculis connectivo antice adnatis, antice sulco separatis, dorso cum connectivo glanduloso-punctatis, filamentis paullo supra basin dorsi infixis. Inter stamina vidi plerumque *rudimentum* pistilli, basi teres curvatum fuscum crassiusculum (ovarium), sursum lutescens attenuatum (stylus); in uno flore stigma horizontaliter bicrure in tali flore inveni.

In alio specimine Gardneriano (n. 2731, "common on the banks of the Gorgia, Aug. 1839.") *folia* paullo majora supra asperulopunctulata et pilis fugacibus inspersa, *receptaculis* solitariis vel geminis adhuc parvis cum ramulis densius pubescentibus.

Var. latifolia. Foliis latioribus ellipticis vel ovato-ellipticis obtusiusculis integerrimis scabriuscule pubescentibus.

HAB. America merid. ad Rio Monte, (Tweedie !) An species ?

TAB. II. B. *Pharmacosycea Radula.* Ramus fructifer, m.n.; *a,* alabastrum masc.; *b,* flos masc; *c,* stamina cum pistilli rudimento; *d,* eadem cum pistilli rudimento perfectiore; *e,* pistilli rudimentum; *f,* stamen a facie, dorso et latere; *g,* alabastrum fœm.; *h,* flos fœm.; *i,* pistillum juvenile; omnes a.m.

2. Pharmacosycea *anthelmintica.* (Ficus anthelminthica, *Mart.* ! *Syst. Mat. méd. Brasil. p.* 88. *Pl. méd. et oecon Bras. ined. Tab.* 77 ! Ficus glabrata, H. B. K. Nov. Gen. II. p. 47.) Glabra, ramulis petiolisque fuscescentibus, foliis oblongis acutatis basi acutis trinerviis et utrinque subhorizontaliter 10–15-costulatis coriaceis utrinque lævibus, stipulis lanceolatis elongatis convolutis, receptaculis axillaribus geminis vel solitariis sessilibus globosis basi involucro tripartito sustentis glabris lævibus.

In sylvis primævis Prov. Paraensis et Rio Negro; "arbor ingens." (*Mart.*) Barra De Gardino, Dec. 1838. (*Gardner,* n. 2000 *in Hb. Hook.* "A fine large tree, common by the side of streams.")

Ramuli teretes, fusci, striolati, læves. *Petioli* semiteretes antice concaviusculi, 3–4 cent. longi. *Folia* coriacea, iis præcedentibus habitu simillima, sed glabritie, apice dentato, et costulis haud adeo horizontalibus diversa, plerumque æquilatera, supra nitida, subtus pallidiora, costulis pallidis prominentibus haud reticulatis ante margines arcubus junctis pertensa, 14–16 cent. longa, 5½–6 lata. *Receptacula* in sp. Gardneriano piso paullo majora, subdepresso-globosa, lævia, ore minuto exiguis bracteis imbricatis obturata, basi involucro appresso tripartito suffulta, intus sub ore bracteis occlusa. *Fl. fœm.* numerosi, *perigonio* profunde 5-partito, lobis basi in pedicellum brevem trigonum coeuntibus lanceolatis acutis apice pilosulis inæqualibus, uno præsertim latiore carinato-concavo ovarium amplectente; *ovarium* subsessile, *stylo* infra medium laterali brevi, *stigmate* obliquo inæquali-bicruri. *Ache-*

nium obovatum. *Fl. masc. perigonio* 4-fido, lobis ellipticis, uno demissius libero. *Stamina* 2 opposita, *filamentis* brevissimis, *antheris* dorso infra ½ alt. exsertis oblongis compressis bilocularibus basi bifidis, una altera paullo minore. *Pistilli rudimentum* teres acutum parvum.

In sp. Martianis *folia* confertiora, *petiolis* brevioribus 1½–2 cent. longis paullo crassioribus sustenta, elliptica vel oblonga obtuso-apiculata, coriacea, breviter subtrinervia, nervo medio supra plano fuscescente, subtus prominente, costis omnino fere horizontalibus utrinque 25–20, majora 22–23 cent. longa, 7–8½ lata. *Receptacula* matura cerasi magn.

Var. foliis minoribus, 13 cent. longis, 5⅓ latis (Prov. Bahia).

3. Pharmacosycea? *dendroctona,* (Ficus dendrocida, *H. B. K. Nov. Gen.* II., *p.* 46. F. dendroctona, *Spreng. Syst. Veg.* III. p. 780.)

Hab. ad fl. Magdalenæ.

4. Pharmacosycea *Guyanensis,* n. sp.; ramis glabris lævibus, ramulis nascentibus circa stipularum basin hirtello-annulatis, cæterum pedunculis receptaculisque scabro-puberulis, foliis breviter petiolatis oblongis vel obovato-oblongis obtuso-apiculatis vix subacuminatis basi acutis vel obtusis integerrimis crasse coriaceis supra nitidis lævibus subtus pallidis asperulo-punctulatis utrinque glabris, e nervo medio basi trinervulo utrinque 8–10 costulatis, costulis pallidis ante marginem arcuato-junctis aliisque tenuioribus prominentibus et reticulatis, stipulis ovato-lanceolatis convolutis subcoriaceis petiolos æquantibus glabris, receptaculis longe pedunculatis globosis basi involucro subtriphyllo sustentis.

Hab. in Demerara, (*Parker! in Hb. Hook.*)

Ph. Radulæ maxime affinis, sed notis indicatis, si sibi constant, distincta. *Rami petiolique* fuscescentes, hi 1–1½ cent. longi, epidermide mox rimosa. *Folia* rigida, utrinque in sicco pallida, supra lævissima, subtus tactu asperiuscula, nec tamen evidenter punctulata, 7–13 cent. longa, 3–5 lata, plerumque æquilateraliter oblonga. *Stipulæ* 1–1⅓ cent. longæ, tereti-convolutæ rigidæ. *Pedunculi* 1–2 cent. longi, solitarii, tenues, scabro-puberuli et ut receptacula dein punctulato-asperi; hæc cerasi minoris magnitudine, ore bracteis parvis clausa, basi bracteis 3 latis parvis obtusis ima basi sub-cohærentibus instructa. *Flores mixti* longe pedicellati bracteolati, adhuc juveniles. *Fœm.* basi bi-tri-bracteolati, bracteolis lineari-lanceolatis; *perigonii* phyllis 5 lanceolato-linearibus subæqualibus. *Ovarium* subsessile, infra apicem styliferum, *stylo* vix exserto in *stigma* inæqualiter bicrure terminato. *Masc.* nondum bene efformati, perigonio diphyllo? phyllis subvalvatis parvis concavis *antheram* subsessilem parvam includentibus.

5. Pharmacosycea *perforata*, n. sp.; glabra, foliis longiuscule petiolatis lanceolato oblongis attenuato-acutis, basi acuta trinerviis et utrinque 10-12-costulatis integerrimis lævibus utrinque minute punctulatis subtus pallidis, costis ante marginem confluentibus venulisque interpositis subpatulis prominulis, receptaculis axillaribus solitariis breviter pedunculatis globosis glabris lævibus basi involucro tripartito sustentis, ore pervio bracteis uniserialibus marginato.

Hab. Rio. (*Graham! in Hb. Hook.*)

Ab *Ph. anthelmintica* differt costis paucioribus et vena inter singulas costas interposita iis breviore sed etiam prominula nec tamen prope margines arcuato-confluente, *receptaculis* in supp. solitariis distinctius pedunculatis, perigonii phyllis haud ciliatis, in utroque sexu 4, in fl. masc. latioribus, pistilli rudimento deficiente, stigmate unicruri.

Ramuli fuscescentes stipularum cicatrice marginati. *Folia* conferta, *petiolis* fuscescentibus tenuibus semiteretibus antice canaliculatis 2–3 cent. longis sustenta, 11–15 cent. longa, 4½–5 lata, supra saturate viridia, subtus glaucescentia, versus margines subreticulata, basi fere breviter triplinervia. *Stipulæ* lineari-lanceolatæ attenuato-acuminatæ, subcoriaceæ, glabræ, læves, subconvolutæ 1½–2 cent. longæ. *Receptacula* piso paullo majora, *pedunculum* tenuem duplo superantia, intus sub ore bracteata, *floribus* mixtis, sed masc. tamen presertim superioribus. *Perigonia* coriacea fusca; *fœm.* tetraphylla, *phyllis* lanceolatis obsolete uninerviis basi in brevem pedicellum coeuntibus subæqualibus, concavis. *Ovarium* sessile oblique obovatum, *stylo* ex apice laterali in rhaphin ventralem decurrente brevi, *stigmate* lineari-lanceolato subobliquo muriculato. *Achenia* crassa albidula, obovata inæquilatera. *Masc. perigonio* obovato tetrophyllo, phyllis obovatis concavo-inflexis pedicello brevi, basi bracteolis binis oppositis lanceolatis stipato. *Stamina* 2, *filamenta* brevia, *antheræ* oblongæ, connectivo crasso nigricante, loculis antice adnatis pallidis punctatis. *Pistilli rudimentum* nullum.

Pharmacosycea *perforata, var. angustifolia,* an species? Foliis lanceolatis attenuato-acutis trinerviis et utrinque 10–12-costulatis, receptaculis brevissime pedunculatis quandoque geminis.

HAB. San Romao, Prov. Minas Geraes, 1840. (*Gardner, n.* 5181!) "A fine large tree." (Claussen! ibid.)

Primo adspectu a præcedenti diversissima, sed paullo accuratius inspecta foliis tantum minoribus angustioribusque et receptaculis brevius pedunculatis diversa esse videtur. *Petioli* 1–3 cent. longi tenues vix fuscescentes. *Folia* 9–12 cent. longa, 3–4 lata, costis magis opproximatis parallelis subtus prominulis prope marginem confluentibus venisque parallelis interpositis. *Stipula* longior, scilicet 3½ cent. æquans, anguste lanceolata subcomplicata, concava, coriacea, glabra, sursum valde attenuata et leviter curvata. *Pedunculi* 1–3 mm. longi. *Receptacula* pisi magnitudinis ore vel aperto vel clauso, prouti bracteæ inflexæ vel imbricatæ sint.

6. Pharmacosycea *obtusiuscula,* n. sp.; glabra, foliis modice petiolatis ellipticis æquilateris vel inæquilateris apice subattenuato obtusiusculis basi acutiusculis subpergamaceis, supra saturate subtus pallide viridibus utrinque glabris lævibus quam minutissime albido-punctulatis, basi subtrinervulis cæterum utrinque 10 fere 15-costulatis, costulis subpatulis ante marginem obsolete confluentibus cum venulis interpositis tenuissimis subtus prominulis vix perspicue reticulatis, receptaculis globosis glabris basi in brevem stipitem constrictis.

HAB. In sylvis ad fl. Itabyre Bahiæ, in Dec., (*Mart.* !)

Quoad folia prope *Ph. adhatodæfoliam* et *anthelminticam. Folia* 11–12 cent. longa, 4½–5 lata. *Receptacula* piso paullo majora, pariete tenui, ore parvo minutis bracteis haud appressis clauso, intus fl. fuscis obtecta. *Perigonia* 4-phylla, *ovario* dimidiato-obovato, *stylo* ex apice laterali in *stigma* filiforme simplex terminato.

7. Pharmacosycea *adhatodæfolia*. (Ficus adhatodæfolia, *Schott, in Spreng. Syst. Veg.* 10. *Append. p.* 409, *teste Spec. Hort. Monac.*) Glabra, foliis modice petiolatis oblongis utrinque acutiusculis tenuiter coriaceis e nervo medio pallido subtus prominente basi tri-vel subquinquenerviis utrinque circiter 12-costatis, costis patentibus prope marginem arcuato-adscendentibus et plerumque confluentibus, aliisque tenuioribus iis interpositis.

Hab. in Brasilia, (*Schot.* ! *Martius* !)

Ph. anthelminticæ simillima, sed ex foliorum costis verisimiliter bene distincta. *Petioli* antice subplani 3, *folia* 15 cent. longa.

Observ. Ab hac *Ficus oblongata,* Kth. et Bouché, Ind. Sem. hort. berol. 1826, non multum differre videtur.

8. Pharmacosycea *vermifuga*. (Ficus anthelminthica, *Mart. Herb.*) Glabra, foliis modice petiolatis lato-ellipticis acutiusculis basi rotundata emarginatis vel leviter subcordatis æquilateris denticulato-repandis tenuiter coriaceis utrinque lævibus subtus pallidis, e nervo medio albicante basi subquinquenerviis et utrinque 10–12-costulatis, costulis patulis tenuibus ante marginem extenuatis et confluentibus, stipulis lanceolatis elongatis, receptaculis axillaribus solitariis vel geminis pedunculatis glabris basi involucre tripartito cinctis.

Hab. in monte Corcovado ad Sebastianopolin, Sept. et Oct., (*Mart.*!)

Arbor magna, a præcedentibus foliorum forma facile distincta. *Petioli* 2½–2 cent. longi semiteretes antice canaliculati. *Folia* supra læte viridia, sub lente quandoque atomulis albidis inspersa attamen lævia 12–13 cent. longa, 6–7½ lata. *Pedunculi* 1–1½ cent. longi. *Receptacula* valde juvenilia piso paullo majora.

9. Pharmacosycea *grandæva*. (Ficus grandæva, *Mart. Hb.* Ficus atrovirens, *Schott, teste Mart.*) Glabra, foliis longiuscule petiolatis lato-oblongis breviter obtusiuscule acuminatis basi obtusis vel rotundatis haud emarginatis integerrimis marginatis, adultis crasse coriaceis subtus pallidis punctulatis, e nervo medio subtus crasso basi 5-nerviis et utrinque 10–12-costatis, costis patulis prominentibus, præsertim superioribus paullo remotius a

margine bifido-arcuato-confluentibus, aliisque tenuioribus prominenter reticulatis, petiolis crassis, receptaculis axillaribus globosis sessilibus? solitariis? glabris.

HAB. in sylvis ad fl. Amazonium Prov. Rio Negro, (*Mart.* ! *in Nov.*)

Petioli 3–4 cent. longi, crassi, in sicco valde rugosi. *Folia* 20–24 cent. longa, 8–10½ lata. *Receptacula* matura, cerasi magn.; *achenia* oblonga subæquilatera uno latere subsulcata, crustacea, dura, albida.

In sp. culto Horti Monac. *petioli* longiores tenuiores, *folia* coriacea, basi angustata 3-nervia, et nervi omnes tenues, quod equidem e cultura.

10. Pharmacosycea *laurifolia*, n. sp.; glabra, foliis modice petiolatis oblongis æquilateris breviter subabrupte et acute acuminatis, basi obtusis vel rotundatis integerrimis pergamaceo-coriaceis lævibus epunctatis utrinque circiter 10-costulatis, costulis alternis tenuibus subpatulis ante marginem confluentibus, venulis numerosis teneris subprominulis et subreticulatis, receptaculis axillaribus pedunculatis solitariis? globosis basi tribracteatis.

HAB. in sylvis secus fl. Japura Prov. Rio Negro, Dec., (*Mart.* !)

Inter congeneres costulis tenuibus paucioribus et dissitis statim distincta. *Petioli* 1–2 cent., *folia* 14–16 cent. longa, 5½–6 cent. lata, sub lente margine lævi cincta et reticulata, nudo oculo costas tantum obferentia. *Receptacula* pisi magnitudinis *pedunculis* brevibus sustenta; flores exigui, sed perigonia fusca video.

Exstat sp. alioquin haud diversum, sed costulis paullo distinctioribus insigne.

11. Pharmacosycea *Parkeriana*, n. sp.; glabra lævis, foliis breviter petiolatis ellipticis vel obovato-ellipticis modice subabrupte oblique obtusiuscule acuminatis, basi acutis obtusiusculis raro subcuneatis, subtrinerviis et utrinque 10–12-costulatis et subtus reticulatis venosisque crasse coriaceis, stipulis ovato-lanceolatis convolutis coriaceis glabris, receptaculis axillaribus breviter pedunculatis globosis basi 3-bracteatis glabris, ore bracteis latiusculis fere imbricatis clauso, ad pedunculi basin rudimento parvo globoso subpuberulo alterius receptaculi.

Hab. in Demerara, (*Parker! in Hb. Hook.*)

Ramorum ramulorumque cortex lævigatus pallidus parce rugosus. *Petioli* 1–2 cent. longi crassi antice sulcati, in vivo forsan colorati. *Folia* crassa, in sicco rigida, supra lævissima nervo medio costisque subpatulis parallelis confertis ante margines arcuato-conjunctis notata, subtus his venulisque interpositis et crebro at tenuiter reticulatis vulgo parallelis instructa, æquilatera vel et inæquilatera, majora oblongo- minora obovato-elliptica, integerrima margine lævi quandoque undulato-repandula, 8–14 cent. longa, 3½–6 lata. *Stipulæ* 1 cent. superantes. *Receptacula* pisi magnitudinis, *pedunculum* paullo superantia, intus bracteolata et dense florifera. *Bracteolæ* et *perigonia* fœm. 4–partita fusca coriacea. *Achenia* pallida crustacea. Reliqua distinguere haud potui.

Observ. Num ad hanc vel saltem hujus generis *Ficus blanda*, Kth. et Bouché, *l. p.* 16. (F. lucida, Hort. berol. nec Ait.)?

12. Pharmacosycea? *Peruviana*, n. sp.; ramis lævibus, ramulis pilis tenerrimis appressis fugacibus inspersis, foliis modice petiolatis lato-ellipticis æquilateris abrupte breviter obtuse acuminatis, basi æquali rotundatis trinervulis et utrinque 6–10-costulatis-venulisque pluribus interpositis tenere reticulatis, stipulis parvis lanceolatis convolutis rigidis coriaceis, receptaculis globosis glabris.

Hab. Peruvio (*Mathews! n.* 2061 *in Hb. Hook.*)

Ob receptacula prorsus destructa in genere dubia. *Petioli* 1–1½ cent. longi antice canaliculati. *Folia* 11–13 cent. longa, 6 lata, coriacea epunctata, lævia, glaberrima. *Stipulæ* petiolum fere æquantes. *Perigonia* fusca; *achenia* albida oblonga subæqualia.

III. Pogonotrophe.

Flores in *receptaculo* globoso basi tribracteato intus pilosissimo monoici vel dioici (?), ebracteolati, sessiles vel pedicellati. *Fœm. Perigonium* tetra-penta-phyllum. *Ovarium gynophoro* brevi vel nullo, *stylo* ex apice laterali crasso, *stigmate* obliquo carinato-lanceolato muriculato. *Masc.* superiores conformes tetraphylli diandri, *filamentis* brevibus, *antheris* linearibus connectivo apiculatis.—*Frutices arboresve* in *India orientali* indigenæ, glabræ vel hirsutæ, *foliis* alternis breviter vel longe petiolatis oblongis rotundatisve, *receptaculis* axillaribus geminis vel solitariis pedunculatis vel sessilibus, *floribus* inter *pilos* densos rigidulos nitentes fere absconditis.

1. Pogonotrophe *Assamica*, n. sp. Foliis longe petiolatis lato-vel obovato-ellipticis breviter acuminatis integerrimis vel sursum repando-denticulatis glabriusculis, receptaculis axillaribus geminis longe pedunculatis.

HAB. Assam. (*Herb. Hook.* !)

Rami fusci lævigati glabri; in *ramulis* nascentibus *petiolis foliisque* junioribus subtus pili sparsi longiusculi molles fugaces. *Folia* alterna longa petiolata lato-vel obovato-elliptica vel ovata æquilatera breviter acuminata, alia basi acuta, alia rotundata vel subemarginata, sursum denticulato-repanda vel prorsus integerrima, membranacea, subtus pallida, 16–18 cent. longa, 12 lata, *petiolis* fuscescentibus sursum quandoque squamulosis, 8–12 cent. longis. *Pedunculi* 2 cent. longi, compressi. *Receptacula* (flor.) globosa, cerasi magnitudinis, lævia, glabra, ore prominulo *bracteis* ovatis puberulo-hirtellis clauso, basi tribracteata, *bracteis* membranaceis parvis glabriusculis deciduis, intus pilis setosis rigidis griseis longis circa flores regulariter dispositis imaque basi fere adhærentibus instructa. *Fl. fœm. Perigonium* 5-phyllum, phyllis lanceolatis subæqualibus fuscis. *Ovarium* gynophoro brevi suffultum, obliquum, *stylo* crassiusculo sursum patule hispidulo, *stigmate* clavato carnosulo tenuiter muriculato, subinde serius apice subemarginato. *Flores masc.* non vidi.

2. Pogonotrophe? *Emodi.* (Ficus Emodi, *Wallich, n.* 4515.)

HAB. Gossain Than.

Folia longe petiolata ovato-cordata acuta, lobis baseos rotundatis sinu lato diremptis, quinquenervia et utrinque 8-costata, membranacea, subtus pallida, rarissime tenera pilosula, sed mox glabra, supra glaberrima nitida, 20 cent. longa. *Petioli* 10–15 cent. longi. *Receptacula* desunt, sed propter habitum prorsus consimilem huc relata.

3. Pogonotrophe *vagans.* (Ficus vagans, *Roxb. Fl. Ind. l. c. p.* 537. *Wight Prod. Pl. Ind. Or. Vol. II. Tab.* 655.) Fruticosa

scandens radicans, foliis longe petiolatis latis lato-ovatis acuminatis basi leviter cordatis 3–5-nerviis costulatisque integerrimis subtus pilosis, receptaculis axillaribus pedunculatis geminis vel solitariis glabris obovato-globosis basi tribracteatis.

HAB. Chittagong. (Roxb. l. c.)

Reliqua conf. l. c. Fl. fœm. tantum vidit; stylum clavatum dicit, sed ex icone *stylus* brevis apparet, *stigmate* incrassato emarginato, ex *R. perforato.*

4. Pogonotrophe *macrocarpa*; (Ficus macrocarpa, *R. Wight, MSS.*) Ramulis petiolis foliisque subtus pubescentibus, his sensim glabratis longe petiolatis ovatis æquilateris vel inæquilateris anguste subabrupte acuminatis, basi æquali-rotundatis 3–raro 5–nerviis et utrinque 2–3–costulatis supra fugaciter puberulis.

HAB. India Orient. Pulney-mountains, (Wight !)

A *P. vaganti* notis propositis satis distincta videtur.

5. Pogonotrophe *Wightiana,* n. sp. Ramis glabris radicantibus, ramulis petiolisque subsericeo-puberulis, foliis breviuscule petiolatis ovatis abrupte obtusiuscule acuminatis, basi æquali leviter cordatis integerrimis membranaceis supra glabris subtus pilis fugacibus inspersis, trinerviis et utrinque circiter 3–costulatis, subtus pallidis et tenere crebro-reticulatis, receptaculis globosis subpedunculatis.

HAB. India Or. (*Wight* !)

Statura minore, glabritie foliorum cæt. a *P. vaganti* et *P. macrocarpa* recedit.

6. Pogonotrophe *rigida,* n. sp. Foliis modice petiolatis ovatis acuminatis, acumine obtusiusculo, integerrimis inde a basi utrinque 6–7–costatis glabris rigide coriaceis utrinque lævibus, receptaculis axillaribus breviter pedunculatis obovato-globosis lævibus, basi bracteis 3 circumscisse deciduis.

HAB. Java. (*Lobb in Hb. Hook.*)

Petioli 1½–2, *folia* 17 cent. longa, 10 lata, pilis fugacibus exceptis glaberrima, costis æquidistantibus.

7. Pogonotrophe *dasyphylla,* n. sp. Foliis ovatis æquilateris abrupte lineari-acuminatis, basi leviter cordatis, tri-vix quinquenerviis et utrinque circiter 4-costatis, costis plerumque subop-

positis, supra glabriusculis lævibus subtus petiolis ramulis stipulis receptaculisque rubiginoso-vel cinereo-tomentosis.

Hab. Ceylon. (*Walker* ! n. 1387.)

Petioli 5–6 cent. longi, densissime tomentosi, ætate glabrescentes. *Folia* 22 cent. longa, 13–16 lata, nervo costisque subtus in sicco rubiginoso-hirtis, reliqua parte cinereo-tomentosa. *Receptacula* cum *pedunculo* 1–½ cent. longo vulgo lutescenti-tomentosa, basi *bracteis* 3 concavis acutis parvis patulis instructa, ore *bracteis* 3 imbricatis tecto, adulta 2–3 cent. in diam., intus pilis albis rigidis fasciculatim inter fl. fœm. dispositis plena. *Perigonii* phylla fusca.

8. Pogonotrophe *Ceylanica*, n. sp. Ramulis, pedunculis, receptaculis fuscescenti-hirsutis, foliis ovatis æquilateris abrupte lineari-acuminatis, basi leviter cordatis, marginibus subrepandis vel prorsus integerrimis, supra lævibus in nervis junioribus pilosulis cæterum serius glabris, subtus subscabriuscule puberulo-subhirtellis 3-vel sub-5-nerviis et inde a medio 2–3-costulatis et reticulato-anastomosantibus coriaceo-membranaceis, receptaculis axillaribus geminis pedunculatis basi tribracteatis globosis hirsutis.

Hab. Ceylon. (*Walker* !)

Præcedenti omnino proxima, attamen pubescentia et nervatione statim dignoscenda. Receptacula intus dense setosa.

9. Pogonotrophe *Javana*, n. sp. Ramulis, pedunculis, receptaculis, petiolis, foliisque subtus in nervis majoribus tomentello-pubescentibus, foliis lato-subovato-ellipticis æquilateris apice obtusis vel rotundatis basi leviter emarginatis vel truncatis integerrimis, marginibus leviter revolutis rigide coriaceis usque ad ½ alt. trinerviis et utrinque 3–4-costatis, supra aspero-punctatis subtus inter nervos majores scabriusculis, receptaculis axillaribus vel supra cicatrices foliorum geminis pedunculatis obovato-globosis basi involucro 3-partito sustentis molliter puberulis, ore obsoleto setulis pallidioribus occluso.

Hab. Java. (*Lobb in Hb. Hook.*)

Rami vetustiores læves glabri; *juniores* rubiginoso-tomentelli. *Petioli* 1½–2 cent. *Folia* 7–10 longa, 5–7 lata. *Stipulæ* lanceolatæ centimetrum vix æquantes. *Pedunculi* 1 cent. longi crassi. *Receptacula* 1½ cent. in diam., intus piloso-setulosa. *Perigonia* pallide fusca.

10. Pogonotrophe *phæopoda*, n. sp. (diff. a præc. fol. subtus molli-tomentosulis, recept. subsessilibus.) Ramulis petiolisque molliter pubescentibus, foliis modice petiolatis ovato-vel lato-ellipticis obtusis vel subacutis, basi rotundatis vix leviter emarginatis, rigido-coriaceis integerrimis marginibus leviter revolutis trinerviis et utrinque 3–4-costulatis, supra nitidis scabro-asperrimis in nervo subhirtellis subtus glauco-incanis, stipulis parvis ovatis convolutis villosis, receptaculis geminis confertis sessilibus vel breviter pedunculatis subglobosis basi tribracteatis puberulis intus setosis, acheniis ovato-subacuminatis.

HAB. Java. (*Lobb! in Hb. Hook.*)

Petioli 1–1½, *folia* 5–8 cent. longa, 6 lata. *Receptacula* 1–1½ cent. in diam. *Perigonii* phylla lineari-lanceolata pallide fusca.

11. Pogonotrophe *reticulata*, n. sp. Ramulis, petiolis-pedunculis, foliisque subtus in nervis hirtello-pubescentibus, his modice petiolatis oblongis vel ovato-oblongis acute apiculatis basi rotundatis vix emarginatis æquilateris integerrimis vel obsolete repandulis crasse coriaceis trinerviis costulisque 6–8 crassiusculis venulisque pluribus subtus valde reticulatis supra glabris nitidis, receptaculis pedunculatis et axillis defoliatis solitariis? globoso-ovatis basi tribracteatis puberulis.

HAB. Ryne Ral, Indiæ borealis. (*Dr. T. Thomson, in Hb. Hook.*)

Petioli 1–1½, *folia* 8–12 cent. longa, 3–5 lata.

12. Pogonotrophe *pubigera*, (Ficus pubigera, *Wall. n.* 4518.) Ramulis petiolis foliisque utrinque præsertim subtus in nervis flocoso-pubescentibus glabrescentibus, his modice petiolatis oblongis longe et oblique acuminatis basi æquali rotundatis integerrimis membranaceis trinerviis et utrinque 4–5-venuloso-costulatis obsolete reticulatis axillaribus breviter pedunculatis solitariis vel geminis? ovato-globosis dense tomentellis basi bracteis 3 glabriusculis suffultis.

HAB. in Nepalia inferiore. (*Wallich!*)

Rami glabri læves, haud plane cylindracei; *ramuli* cito glabrescentes. *Petioli* $1\frac{1}{2}$–2 cent., *folia* 14–16 cent. longa, 5–6 lata. *Stipulæ* lanceolatæ dense tomentellæ 1 cent. circiter longæ. *Receptacula pedunculis* brevibus aliquot millim. longis puberulis sustenta, adhuc juvenilem pisum circiter æquantia, nunc dense subochraceo-tomentella, serius forsan glabrata.

13. *Pogonotrophe verrucosa*, n. sp. Ramis glabris, ramulis petiolis receptaculis junioribus foliisque subtus in nervo hirtellis glabrescentibus, his modice petiolatis ovato vel sublanceolato-oblongis abrupte longiuscule acuminatis, basi rotundatis integerrimis vel versus apicem vix repandis, coriaceis trinerviis et utrinque 4–6 costatis venosis subtusque reticulatis glaucescentibus, receptaculis subsessilibus solitariis subobovatis basi 3 bracteatis verrucosis.

Hab. Assam, Khatiga. (*Hb. Hook.* !) *Folia* 10–16 cent. longa.

Tab. A. *Pogonotrophe verrucosa*; folium et *a* receptaculum, n.m.; *b*, flos masc.; *c*, stamina; *d*, fl. fem. cum pilis circumpositis; *e*, pistillum, n.m.

14. Pogonotrophe *glandulifera*. (Ficus glandulifera, *Wall.* n. 4487.) Ramulis, petiolis pedunculis receptaculisque (aurantiaco-) hirtellis, foliis modice petiolatis oblongis abrupte breviter acuminatis, basi rotundatis, æquilateris, integerrimis, junioribus, in nervo medio præsertim, utrinque hirtellis, receptaculis axillaribus solitariis vel geminis breviter pedunculatis subglobosis basi subconstricta tribracteatis.

Hab. Penang. (*Hb. Wall.* !)

Rami cito glabrati læves. *Petioli* $1\frac{1}{2}$–2 cent. longi; *folia*, adhuc juniora 6–7 longa, $3\frac{1}{2}$ lata, trinervia et utrinque 4–5 costulata. *Stipulæ* parvæ elliptico-lanceolatæ concavæ dorso sericeæ. *Receptacula* axillaria et supra foliorum delapsorum cicatrices, subglobosa sericeo-hirtella (nascentia), intus sub ore bracteis occlusa, cæterum pilis longis sericeis plane repleta, inter quos florum primordia.

15. Pogonotrophe ? *foveolata*. (Ficus foveolata, *Wall.* n. 4493.) Ramulis petiolis pedunculis receptaculisque junioribus puberulo-hirtellis (subaurantiacis), foliis modice petiolatis ovato-oblongis oblongisve acuminatis, basi rotundatis integerrimis vel subundulato-repandis subtrinerviis et utrinque pluri-costulatis sub-

coriaceis subglabris subtus pallidis et sub lente dense crassiuscule reticulatis sublacunoso-punctatis, receptaculis solitariis (et geminis) longiuscule pedunculatis supra cicatrices foliorum ovatis basi tribracteatis.

Hab. Nepaliam. (*Wallich*!) Specimina ex aliis stationibus indicata, inter quæ cum? etiam *Ficus Lodoocea*, Hb. Roxb. et *var. elegans*, Wall. haud vidi.

Rami cito glabrati. *Petioli* 1- fere 2 cent., *folia* 12–15 cent. longa, 5–6 lata, subtus circiter 10–12 costulis patulis ad marginem confluentibus et prominule reticulatis notata, sub lente quasi lacunosa. *Stipulæ* fere 1 cent. longæ ovato-lanceolatæ acuminatæ dorso hirtellæ deciduæ. *Pedunculi* 1–1½ cent., *receptacula* juniora 1 cent. longa, intus sub ore bracteis occlusa, cæterum floribus fuscis, sed maximam partem destructis obtecta, qui pilis sed adhuc parvis discriminati sunt.

Observ. Ab hac non multum differre videtur illa *Ficus Luducea*, Roxb. Fl. Ind. iii. p. 534, ex Dosa Indiæ, a me non visa.

16. Pogonotrope? *ribesioides*. (Ficus ribesioides, *Wall. List.* n. 4522.) Ramulis petiolis foliisque junioribus subtus in nervis hirtellis sensim glabrescentibus, foliis breviter petiolatis oblongo-lanceolatis obtuso-apiculatis, basi rotundata trinerviis et utrinque 3–5 costulatis subtus reticulatis glabris coriaceis integerrimis, receptaculis axillaribus solitariis? sessilibus glabris.

Hab. Singapur. (*Wall.*!)

In genere adhuc dubia. *Petioli* fere ½ cent., *folia* 7–9 cent. longa, 2½–3½ lata.

(*To be continued.*)

Contributions towards a FLORA OF BRAZIL, *being the distinctive characters of some new species of* COMPOSITÆ, *belonging to the tribe* ASTEROIDEÆ. By GEORGE GARDNER, F.L.S., Superintendent of the Royal Botanic Gardens, Ceylon.

(*Continued from Vol.* VI. *p.* 463.)

ASTER. *Nees.*

4923,2. Aster (*Alpigeni*) *longipes;* foliis radicalibus obovato-oblongis obtusis basi cuneato-attenuatis triplinerviis integerrimis hirsutis demum glabratis, scapo foliis multo longiore angulato glabro squamoso, involucri squamis linearibus acutis ciliatis 1-nerviis, achæniis pilosis.

HAB. Dry Campos near the foot of the Serra de Piedade, Province of Minas Geraës. Sept., 1840.

Herba perennis. Folia radicalia 1½–2 poll. longa, 3–4½, lin. lata. Scapus subpedalis, sparsè squamosus, 1-cephalus. Capitulum multiflorum, radiatum. Involucrum sub-3-seriale. Receptaculum nudum, punctatum. Flores radii elongati, uniseriales, ligulati, fœminei, purpurei: tubo elongato, piloso: stylus cylindraceus, basi bulbosus, bifidus, ramis linearibus obtusis marginibus incrassatis. Flores disci tubulosi, hermaphroditi, glabri: antheræ flavæ, ecaudatæ: stylus cylindraceus, ramis angustè linearibus, extus puberulis. Achænium obovatum, compressum, marginatum, pilosum. Pappus pilosus, persistens, biserialis, setis scabridis subinæqualibus, cæterum inter se similibus.

This species of *Aster* does not seem very nearly related to any hitherto described, but evidently belongs to the section *Alpigeni* of Nees.

4237. A. (*Alpigeni*) *camporum;* caule erecto simplici vel subramoso folioso villoso, ramis 1-cephalis, foliis sessilibus oblongo-linearibus obtusis versus apicem minutè denticulatis villosis striatis reticulatis, involucri squamis 3-serialibus lineari-lanceolatis acutis 1-nerviis pubescentibus margine scariosis ciliatis laxis disco subæqualibus, ligulis linearibus disco duplo longioribus, achæniis hispidis.

HAB. Open Campos near Nossa Senhora d'Abadia, Serra Geral, Province of Goyaz. May, 1840.

Herba perennis. Caules plures ex eadem radice, 4–6-pollicares. Folia 6–8 lin. longa, 1½ lin. lata. Capitulum multiflorum, radiatum. Receptaculum planum, nudum. Flores radii elongati uniseriales, ligulati, fœminei, albi: tubo subpiloso: stylus cylindraceus, basi bulbosus, bifidus, ramis obtusis. Flores disci tubulosi, hermaphroditi, 5-dentati, dentibus extus pilosiusculis: antheræ ecaudatæ: stylus cylindraceus, ramis linearibus, obtusis, puberulis. Achænium oblongum, compressum, piloso-hispidum. Pappus pilosus, persistens, biserialis, setis scabridis subinæqualibus cæterum inter se similibus.

The only two specimens which I possess of this plant are both in rather a young state, but the flowers are perfectly developed. In both there is the rudiment of a branch in the axil of a leaf about the middle of the stem. The old plant may therefore be slightly branched. The radical leaves, if any exist, I have not seen, and those at the base of the stem are of a scaly nature.

ERIGERON, *Linn.*

4923. E. (*Euerigeron*) *scaberrimum;* caule herbaceo erecto ramoso sulcato-striato pubero-scabrido, foliis radicalibus longè petiolatis, caulinis sessilibus amplexicantibus oblongo-lanceolatis acutis grossè mucronato-dentatis utrinque setulis densis aspero-scabris, summis multo minoribus inciso-serratis, capitulis ad apices ramulorum solitariis corymbosis, involucri squamis lanceolatis acuminatis striatis extus densè setoso-tomentosis margine membranaceis, ligulis disco duplo et ultra longioribus.

HAB. In marshy Campos near Villa do Principe, Province of Minas Geraës. Aug., 1840.

Herba 6-pedalis. Folia radicalia sesquipedalia, 3–3½ poll. lata. Ligulæ angustæ, lineares, apice 2–3-dentatæ, albæ, 9 lin. longæ. Corollæ disci flavæ. Antheræ ecaudatæ. Achænium compressum, margine costatum, glabrum. Pappus rufescens.

This species agrees in habit with *E. sulcatum*, DC., and with my *E. alpestre* and *palustre*, differing from them principally in its very scabrous leaves, the upper ones inciso-serrated, and in its scabrously tomentose involucral scales.

PLATYSTEPHIUM, *Genus novum.*

Char. Gen. *Capitulum* multiflorum, radiatum, floribus *radii* uniseriatis, ligulatis, fœmineis, *disci* tubulosis hermaphroditis. *Involucrum* campanulatum, biseriale, squamis lanceolatis acutis.

Receptaculum conicum, nudum. *Styli radii* valdè exserti, bifidi, ramis obtusis, *disci* inclusi breviter bilobi, lobis complanatis obtusis. *Achænia* oblonga, compressiuscula, margine læviter costata, sparsè pilosa, apice truncata, in disco magno dilatata, pappo coroniformi instructa.—Herba *Brasiliensis,* Grangeæ *facie, odorata, annua, dichotomo-ramosa;* foliis *alternis, sessilibus, basi biauriculatis, bipinnatifidis, lobis obtusis mucronatis;* capitulis *solitariis, hemisphericis, in pedunculis oppositifoliis.*

1739 et 2651. Platystephium *graveolens,* Gardn.

HAB. In the dried up sandy beds of streams near Icó, Province of Ceará (1739), and in shady sandy places near Paranagoa, Province of Piauhy (2651). Fl. July—Oct.

DESCR. Herba annua, dichotomo-ramosa, subpedalis. Rami teretes, striati, villoso-hirsuti, foliosi. Folia alterna, sessilia, basi amplexicaulia, obtusa, bipinnatifido-lobata, lobis latis obtusis mucronatis utrinque hirsutis, sesquipollicaria, 8–10 lin. lata. Pedunculi oppositifolii, teretes, villosi, 3 lin. longi. Capitula solitaria, multiflora, 3 lin. lata.

The plant on which I establish this genus has quite the habit of *Grangea,* and agrees with it, besides, in several points of structure; but the single series of ligulate florets prevents it from being associated with the *Baccharideæ,* and removes it to the subtribe *Asterineæ.* Its characters otherwise resemble the *Bellideæ,* and its situation seems to be between *Myriactis* and *Garuleum.* The plant in all its parts has a powerful smell of Chamomile, and it is used as a substitute for it by the inhabitants of the districts in which it grows.

BACCHARIS, *Linn.*

Sect. Trinervatæ.

4918.1. B. *inamœna;* suffruticosa, caulibus erectis simplicissimis angulato-sulcatis versus apicem sublanuginoso-villosis, foliis alternis petiolatis membranaceis oblongo-lanceolatis trinerviis utrinque subacutis apice mucronatis margine revolutis integerrimis suprà subresinoso-nitidis glabriusculis subtus sparsè villosis pallidis reticulatis, paniculis terminalibus laxis, capitulis masc. pedicellatis, involucri campanulati squamis glabriusculis imbricatis, exterioribus ovalibus obtusis membranaceis, interioribus linearibus longioribus apice ciliatis.

HAB. In dry Campos near Morro Velho, Province of Minas Geraës. Sept., 1840.

Suffrutex 2–3-pedalis. Folia 1½–2 poll. longa, 6 lin. lata. Petioli 3 lin. longi, basi lanuginosi. Flores masculi tubulosi, profundè 5-fidi, laciniis revolutis: antheræ exsertæ: stylus apice bifidus, abortivus. Pappus rufescens.

Apparently near *B. venusta*, H.B.K., which those authors say is allied to *B. trinervis*, Pers.

4900,1. B. *lanuginosa;* herbacea vel suffruticosa, caulibus erectis simplicibus striatis densè cinereo-lanuginosis, foliis alternis sessilibus ovato-lanceolatis basi dilatatis truncatis apice longè attenuatis acutis margine integris revolutis trinerviis supra villoso-tomentosis subtus cinereo-lanuginosis, paniculis terminalibus elongatis oblongis densis, capitulis fœmineis pedicellatis, involucri campanulati squamis lanceolatis acuminatis 1-nerviis extus villoso-tomentosis, achæniis oblongis 5-costatis puberulis.

HAB. Dry bushy places between Villa do Principe and Cocaës, Province of Minas Geraës. Aug., 1840.

Caules plures ex eadem radice, 3–5-pedales, erecti, densè foliosi. Folia 1 poll. longa, 4 lin. lata. Capitula fœm. 6 lin. longa. Flores angustè tubulosi, apice 5-dentati. Stylus exsertus, bifidus, ramis acutis. Pappus albus, involucro multo longior.

Very distinct from any described species, and certainly belonging to De Candolle's first section. The plant has a remarkable appearance when growing, from its elongated dense panicles, and very long white pappus.

Sect. Cuneifoliæ.

—— B. *truncata;* fruticosa erecta ramosa glabra glutinosa, ramis angulato-striatis, foliis breviter petiolatis obovatis basi subcuneatis 3-nerviis apice truncatis obtusè 3-dentatis coriaceis integerrimis utrinque densè resinoso-punctatis, capitulis masc. ad apices ramulorum in axillis ultimis solitariis pedicellatis folio vix brevioribus ovatis, involucri squamis exterioribus parvis ovatis obtusis, interioribus oblongis obtusis disci longitudine.

HAB. Open rocky places in the Diamond District. Aug., 1840.

Frutex 2-pedalis, ramosissimus. Folia 5–6 lin. longa, 3½–4 lin. lata. Flores masculi tubulosi, 5-fidi: antheræ vix exsertæ: stylus clavatus, læviter bifidus, abortivus. Pappus albidus.

Allied to *B. reticularis*, DC. I regret that the number of this plant has been lost.

4908. B. *elliptica;* fruticosa erecta ramosa glabra glutinosa, foliis brevissimè petiolatis ellipticis utrinque obtusis triplinerviis ultra medium dentatis utrinque venosis suprà nitidis, capitulis fœmineis axillaribus solitariis ad apices ramulorum subcorymbosis longè pedicellatis, pedicellis angulatis folio duplò fere longioribus, capitulis magnis ovato-globosis, involucri squamis pluriserialibus imbricatis oblongis obtusis concavis striatis, achæniis oblongis 10-costatis breviter rostratis glabris.

HAB. Upland Campos, Diamond District. July, 1840.

Frutex 4-pedalis. Folia 15–18 lin. longa, 9–10 lin. lata. Capitula 5 lin. longa. Flores fœminei angustè tubulosi, apice 5-dentati. Stylus exsertus, bifidus. Pappus albus, valdè deciduus, cor. æqualis.

Related to *B. Vauthieri*, DC., and its allies, but well distinguished from them all by its long pedicels, large capitula, rostrate achænium, and deciduous pappus. The leaves are scarcely, if at all, cuneate at the base: its affinities otherwise are wholly with the cuneate division.

3838 et 4906. B. *rivularis;* fruticosa ramosa, ramulis teretibus ad apicem cinereo-furfuraceo-tomentosis, foliis petiolatis lanceolatis acutis basi longè cuneato-attenuatis triplinerviis grossè remotisque serrato-dentatis furfuraceis demum glabratis, pedunculis axillaribus racemosis 6–10-cephalis, capitulis brevi-pedicellatis, involucri campanulati squamis margine scariosis ciliolatisque exterioribus ovatis acutis, interioribus linearibus vix acutis, achæniis teretibus striatis glabris.

HAB. Margins of streams in woods near Villa de Arrayas, Province of Goyaz (3838), and near San Romao, Province of Minas Geraës (4906). April and June, 1840.

Frutex 6-pedalis, ramosus. Folia 3–4½ poll. longa, 6–10 lin. lata, grossè reticulato-venosa, venis utrinque prominulis. Pedunculi subpollicares. Pappus sordidè rufescens.

As a species this will range along with *B. heterophylla*, H.B.K. The leaves of the specimens from Minas are larger and more coarsely toothed than those from Goyaz.

4912. B. *ramosissima;* fruticosa glabra viscosa, ramis teretibus striatis, ramulis angulatis, foliis obovato-cuneatis in petiolum attenuatis obtusissimis dentibus obtusis utrinque 4 suprà glutine viscoso lucidis subtus minutè resinoso-punctatis triplinerviis, capitulis masc. axillaribus solitariis pedicellatis folio vix longioribus ad apices ramulorum racemos foliaceos constantibus, involucri ovato-oblongi squamis obtusiusculis.

Hab. Near Formigas, Province of Minas Geraës. July, 1840.

Frutex 6-pedalis, ramosissimus. Folia vix petiolata, 1 ½–3 poll. longa, 9–18 lin. lata, floralia multò minora. Pappus rufescens.

Allied to *B. retusa*, DC., principally distinguished by its triplinerved leaves.

4910. B. *intermixta;* fruticosa ramosa glabra, ramis teretibus striatis, foliis obovato-lanceolatis acutis in petiolum cuneato-attenuatis supra medium grossè serrato-dentatis tri-vel subtriplinerviis membranaceis, capitulis masc. axillaribus solitariis pedicellatis folio vix longioribus ad apices ramulorum in racemos foliaceos congestis, involucri oblongi 7-flori squamis oblongo-lanceolatis acutis.

Hab. Bushy places near Cocaës, Province of Minas Geraës. Aug., 1840.

Frutex 4-pedalis. Folia 2½–3 poll. longa, 9–15 lin. lata, tenuiter venoso-reticulata, venis subtus prominulis. *Pappus* sordidè albidus.

Nearly akin to the preceding species, and differing from it by its less branched habit, and membranous acute leaves, which are besides neither viscous nor shining.

3839 et 4913. B. *varians;* fruticosa glabra subviscosa ramosa, ramis striatis, foliis sessilibus oblongo-lanceolatis vel lineari-oblongis obtusis basi cuneato-attenuatis integris vel versus apicem subdenticulatis tenuiter triplinerviis, capitulis axillaribus sessilibus ad apices ramulorum spicato-congestis oblongis, masc. 6-floris, fœm. 10-floris, involucri squamis oblongo-lanceolatis ciliatis, masc. acutis, fœm. obtusis, achæniis striatis glabris.

Hab. In dry Campos near Villa de Arrayas, Province of Goyaz (3839), and near Formigas, Province of Minas Geraës (4913). April and July, 1840.

Frutex 3–4-pedalis. Folia 1–2 poll. longa, 1–3 lin. lata. Pappus sordidè albidus vel rufescens.

This species ranges with *B. paucifloscu1osa*, DC. In the Goyaz plant the leaves are longer and narrower than in the Minas one, and are occasionally dentate. The pappus of the former is besides longer and whiter in the female flowers than in the latter: in every other respect they are the same.

4251. B. *subcapitata*; fruticosa glabra subviscosa ramosa, ramulis angulatis, foliis sessilibus oblongis obtusis basi cuneatis integerrimis tenuiter triplinerviis utrinque minutè resinoso-punctatis, capitulis axillaribus sessilibus ad apices ramulorum subcapitato-congestis ovato-oblongis, fœm. 14-floris, involucri squamis oblongis obtusissimis ciliolatis, achæniis striatis glabris.

Hab. Dry upland Campos between Arrayas and San Domingos, Provence of Goyaz. May, 1840.

Frutex 2–3-pedalis. Folia 12–18 lin. longa, 3–6 lin. lata, vix venosa. Pappus pallidè rufescens.

Allied to the last species, but very distinct.

Sect. Discolores.

4898. B. *lychnophora*; fruticosa ramosa, ramis teretibus pedunculisque cinereo-lanuginoso-tomentosis, foliis petiolatis lanceolatis obtusis basi in petiolum cuneato-attenuatis margine integerrimis tenuiter revolutis penniveniis supra glabris nitidis eleganter reticulato-venosis subtus lanuginoso-tomentosis, panicula terminali ramosissima polycephala subaphylla, involucri masc. campanulati squamis pedicellisque ferrugineo-tomentosis oblongo-linearibus obtusis ciliatis.

Hab. Moist rocky places on the high mountains of the Diamond District. July, 1840.

Frutex 6-pedalis. Folia 3–5 poll. longa, 6–9 lin. lata, coriacea. Paniculæ 6–12-pollicares, ramosæ, ramis basi bracteatis subfoliaceis. Capitula 2 lin. longa. Pappus rufus.

Near B. *tarchonanthoides*, DC., from which it is distinguished by its more coriaceous entire leaves, which are, besides, much more distinctly reticulated on the upper surface.

4901. *B. oleifolia*; fruticosa, ramis teretibus striatis junioribus hirsuto-tomentosis, foliis breviter petiolatis oblongo-lanceolatis obtusis vel acutiusculis basi attenuatis margine læviter revolutis integerrimis suprà glabris nitidis reticulatis subtus densè villoso-tomentosis, racemis axillaribus terminalibusque in paniculam foliosam dispositis, capitulis pedicellatis, involucri masc. campanulati squamis oblongis obtusis ciliatis, fœm. ovati squamis oblongo-lanceolatis acutis ciliatis, achæniis striatis glabris.

HAB. Bushy places in ravines, Diamond District. July, 1840.

Frutex 6-pedalis. Folia 12–18 lin. longa, 3–5 lin. lata. Racemi folio longiores, in fœmineis magis conferti quam in masculis. Pedicelli hirsuti, basi bracteati, bracteis parvis, subfoliaceis. Pappus rufescens.

Sect. Oblongifoliæ.

4900. B. *recurvata*; fruticosa ramosa cano-villosa, ramis teretibus striatis, ramulis recurvatis, foliis sessilibus lineari-oblongis acutis versus apicem acutè 4–5-dentatis utrinque villosis penniveniis, capitulis masc. ad axillas superiores sessilibus et ideò in racemum foliosum digestis 18–20 floris, involucri squamis lineari-oblongis obtusissimis ad apicem ciliatis.

HAB. In marshy bushy places near Piranga, Province of Minas Geraës. October, 1840.

Frutex 6–8-pedalis. Folia 12–15 lin. longa, 2½–3 lin. lata. Involucrum vix 3 lin. longum. Pappus rufescens.

Allied to *P. dracunculifolia*, DC., but characterized by its recurved branches, villous and more numerously dentate leaves, and obtuse involucral scales. The branches, having several branchlets at their apices, are somewhat paniculate in appearance.

4915. B. *bupleuroides*; fruticosa, ramis teretibus striatis apice

angulatis pilosiusculis demum glabris, foliis sessilibus oblongo-linearibus obtusis calloso-mucronatis basi attenuatis versus apicem calloso-denticulatis ad medium triplinerviis grossè reticulato-venosis glabris, paniculæ terminalis corymbosæ laxæ ramis ramulisque puberulis, capitulis masc. pedicellatis, involucri campanulati squamis oblongis acutis ciliatis.

HAB. In marshy bushy places, Diamond District. July, 1840.

Frutex 4–6-pedalis. Folia conferta, 4–5 poll. longa, 6 lin. lata. Flores masculi numerosi, lutei: stylus abortivus, longè exsertus, apice bifidus. Pappus rufescens.

Agrees in habit with *B. ligustrina*, DC., differing from it by its much larger triplinerved leaves.

2905 et 3296. B. *subspathulata*; fruticosa glabra, ramis teretibus striatis junioribus angulatis, foliis sessilibus lineari-spathulatis obtusis uninerviis integerrimis, capitulis fœm. ad axillas superiores sessilibus confertis, involucri cylindracei squamis lineari-lanceolatis acutis, achæniis striatis glabris.

HAB. In dry Campos in the district of the Rio Preto, Province of Pernambuco (2905), and near the mission of Duro, Province of Goyaz (3296). Oct., 1839.

Frutex bipedalis. Folia 6–9 lin. longa, 1½ lin. lata. Involucrum 3 lin. longum. Pappus sordidus.

Near *B. tenuifolia*, DC., and perhaps not essentially distinct from it, judging from the description; but neither the leaves nor the branches are viscous and shining in my plant, which they are said to be in that of De Candolle.

4903. B. *curvifolia*; fruticosa ramosa glabra viscosa, ramis teretibus striatis, foliis sessilibus linearibus acuminatis integerrimis trinerviis, acumine reflexo, capitulis masc. ad apices ramulorum in capitulum parvum foliosum dispositis 5-floris, involucri oblongi squamis oblongis obtusis.

HAB. Elevated rocky tracts in the Diamond District. July, 1840.

Frutex 4–pedalis. Folia 12–18 lin. longa, 1–1½ lin. lata. Involucrum 1½ lin. longum. Pappus pallidè rufescens.

Near the preceding species: well marked by its 3-nerved leaves with recurved apices.

4902. B. *polyphylla*; fruticosa ramosissima glabra viscosa, ramis teretibus striatis, foliis sessilibus longè angustèque linearibus obtusis margine integerrimis revolutis 1-nerviis, capitulis ad axillas foliorum superiores solitariis sessilibus in spicam foliosam dispositis, involucri masc. ovati squamis ovato-oblongis obtusis margine membranaceis pappum æquantibus.

HAB. Arid rocky places in the Diamond Districts. Aug., 1840.

Frutex 3–pedalis. Folia 1½–2 poll. longa, vix lineam lata. Capitula 1½ lin. longa. Pappus sordidus, setis apice dilatatis fimbriatis.

Near *B. Megapotamica*, DC.

4917. B. *fuchsiæfolia*; fruticosa glabra, ramis teretibus striatis, foliis petiolatis oblongo-lanceolatis utrinque acuminatis mucronato-denticulatis suprà nitidis subtus punctatis membranaceis penniveniis, racemis axillaribus petiolo paulò longioribus, capitulis masc. pedicellatis 15-floris, involucri campanulati squamis lineari-oblongis acutis ciliatis.

HAB. Near Japinhacanga, Province of Minas Geraës. Aug., 1840.

Frutex 8-pedalis. Folia 4–4½ poll. longa, 15–17 lin. lata: petioli 4–6 lin. longi. Pappus rufescens.

Near *B. Oronocensis*, DC.

HYMENOPHOLIS, *Genus novum.*

CHAR. GEN. *Capitula* multiflora, dioica, homogama, floribus tubulosis. *Involucri* oblongi imbricati *squamæ* siccæ, ovatæ, obtusæ. *Receptaculum* planum, nudum. MASC.: *Corollæ* tubulosæ, apice dentatæ, limbo æqualiter quinquedentato. *Antheræ* inclusæ, basi bisetæ. *Stylus* filiformis, apice bifidus. *Ovarium* effœtum pilosum. *Pappus* pilosus, uniserialis, setis vix scabridis, basi connatis. FŒM.: *Corollæ* filiformes, angustè 4–5-dentatæ. *Antheræ* nullæ. *Stylus* bifidus, exsertus. *Achænia* oblonga, pilosa. *Pappus* ut in maribus.—Herba *perennis Brasiliensis*; foliis *sessilibus, alternis, adpressè imbricatis, lineari-lanceolatis, acuminatis, integerrimis, 3-nerviis, tomentosis*; capitulis 3–9 *ad apices ramulorum congestis.*

4891. Hymenopholis *imbricata*, Gardn.

HAB. Elevated Campos between Meridanha and the Ciudade Diamantina. July, 1840.

DESCR. *Herba* perennis. *Radix* usque ad collum lignosa. *Caules* plures ex eadem radice, erecti, sesquipedales, versus apicem ramosi, foliosi, cano-lanuginoso-tomentosi. *Folia* sessilia, alterna, adpressa, imbricata, lineari-lanceolata, acuminata, integerrima, utrinque tomentosa, 3-nervia, 6–8 lin. longa, 1½–2 lin. lata. *Capitula* 3–9, ad apices ramulorum congesta, 15–20 flora. *Involucrum* oblongum, 5 lin. longum, squamis pluriserialibus, imbricatis, ovatis, obtusis, albis, membranaceis, glabris, striatis.

The diœcious character and caudate anthers of this plant, refer it at once to the subtribe *Tarchonantheæ* of the *Asteroideæ*. It is peculiar in habit, and very distinct from any allied genus, *Baccharis* being that to which it has the greatest affinity.

BLAINVILLEA, *Cass.*

6053. B. *polycephala*; foliis ovato-lanceolatis acuminatis basi obtusis trinerviis obtusè serrato-dentatis suprà pubescenti-hirtellis subtus piloso-tomentosis, ramulis dichotomis, petiolis pedunculisque hirtellis, pedunculis alaribus petiolo multò longioribus, involucri squamis oblongo-lanceolatis acuminatis striatis, achæniis pilosiusculis 2–3-aristatis, aristis barbatis.

HAB. In dry bushy places near the city of Maranham. May, 1841.

Herba annua, 3–4-pedalis. Folia 3–3½ poll. longa, 12–15 lin. lata. Capitula 6 lin. longa.

Near B. *rhomboidea*, Cass., from which it is distinguished by the shape of its leaves, the size of the capitula, and the acuminate, not obtuse, involucral scales.

1740. B. *racemosa*; foliis lanceolatis acutis basi obtusis 3-nerviis integriusculis rugosis utrinque piloso-pubescentibus, ramulis dichotomis, petiolis pedunculisque hirtellis, pedunculis alaribus et oppositifoliis in racemum foliosum dispositis petiolo longioribus, involucri squamis oblongo-lanceolatis acutis striatis apice subfoliaceis, achæniis radii 3, disci 4-aristatis barbatis.

HAB. In dry, sandy, shady places near Villa do Icó, Province of Ceará. Aug. 1838.

Herba annua, 3–4-pedalis. Folia $1\frac{1}{2}$–2 poll. longa, 6–8 lin. lata. Capitula $4\frac{1}{2}$ lin. longa.

A very distinct species, more slender in habit than any I know; the capitula arranged in loose leafy racemes on the branches and branchlets.

The following is a list of those species belonging to the *Asteroideæ*, contained in my collections, which I find already described:—

495, 1727, 3840	Erigeron *Bonariense*, Linn.
776	——— *Canadense*, Linn.
4923, bis	——— *palustre*, Gardn.
492	Conyza *triplinervia*, Less.
4924	——— *Chilensis*, Spr.
874, 1346, 1726	Baccharis *rhexioides*, H. B. K.
772, 785, 4914	——— *Lundii*, DC.
4905	——— *Vauthieri*, DC.
515, 4907, 4908	——— *platypoda*, DC.
784	——— *cassinifolia*, DC.
4911	——— *pauciflosculosa*, DC.
4897	——— *tarchonanthoides*, DC.
4918	——— *vernonioides*, DC.
4892	——— *aphylla*, DC.
500, 4896	——— *trimera*, DC.
4895	——— *myriocephala*, DC.
498, 1347, 2653, 5519, 6049	Pluchea *Quitoc*, DC.
4894	Pterocaulon *spicatum*, DC.
795, 523, 1054	Eclipta *erecta*, Linn.
5521	——— *brachypoda*, Michx.

Peradenia, Kandy, Ceylon,
23rd Aug. 1847.

Brief characters of AULACOPILUM, *a new Genus of Mosses, from New Zealand.* By WILLIAM WILSON, Esq.

AULÁCOPILUM, *Wils.* nov. gen.

Peristomium nullum. *Calyptra* sulcata, magna, capsulam obtegens, latere medio fissa. *Annulus* nullus. *Seta* lateralis. *Capsula* erecta, æqualis.—(nomen ab αυλαξ *sulcus*, et πιλον *calyptra*.)

Folia disticha, glauca, enervia. Seta brevis. Capsula pallida, erecta. Florescentia *monoica.*

Aulacopilum *glaucum.*

HAB. New Zealand, on trees, growing intermixed with *Fabronia secunda.* 1843. *Rev. W. Colenso.*

Very small, scarcely larger than the *Fabronia.* Stems creeping, sparingly and irregularly branched. Leaves distichous, obliquely ovate, acuminate, spreading, flattish, nerveless, papillose at the margin and on the back, areolæ granular, colour glaucous-green; when dry appressed. Perichætial leaves erect, lanceolate. Seta not twice the length of the capsule, pale and rather thick. Capsule roundish-ovate, pale glaucous-green, truncate. Operculum conico-rostellate, about half the length of the capsule. Calyptra large, nearly twice as long as the capsule, closely embracing the seta below it, and in other respects like that of *Calymperes,* at length split laterally, with a tendency to separate at the base into eight or more laciniæ corresponding with the number of furrows, pale yellowish-brown, reddish at the apex. Spores green, rather large. Perigonii orange-coloured, anthers without paraphyse.

The singular calyptra, the absence of peristome, and indeed the whole habit of the plant, entitle it to rank as a new genus, bearing almost the same relation to other *Pleurocarpi* that *Calymperes* does to the *Acrocarpi.*

This very curious moss may perhaps form the type of a new genus. It differs from other species of *Splachnum* in the peristome, which is not reflexed when dry, and probably in the dioicous inflorescence. The habit of the moss, apart from its singular apophysis, is that of *Orthodon,* with which it agrees, especially in the structure of the peristome, and in its place of growth upon the trunks of trees.

Tab. IV. Fig. A. Plants, nat. size; f. 2, portion of a plant, magnified; f. 3, leaf; f. 4, apex of ditto; f. 5, 6, 7, capsules; f. 8, teeth of peristome,—all more or less magnified.

Further remarks on the POLLEN-COLLECTORS *of* CAMPANULA, *and on the mode of fecundation.* By W. WILSON, Esq.

FIVE years ago I presented to the readers of this Journal the result of my early studies of this genus (see vol. i, p. 601), and I have now to acknowledge that I was led by the appearances which I observed, into the erroneous conclusion, that the pollen-grains obtain access to the interior of the collecting hairs by virtue of some peculiar function exercised by these organs. Very soon after the publication of my paper, I became dubious about the validity of the inference I had drawn from innumerable examples; and in the following season, having had recourse to the test of examination of the pollen-collectors previous to dissection, I could no longer withstand the conviction that the introduction of pollen-grains within the hairs does not take place until an avenue is artificially opened by means of the dissecting knife; and that all the numerous cases of introduction which I had witnessed were owing to the facility with which the grains enter the hairs at the moment when the sections were made for microscopic scrutiny. I have now to state, by way of apology, that the inference, though an erroneous one, was not hastily made, and that the same inference has since been made by Dr. Hartig, and adopted by him, as an important fact, in support of his new theory of the fertilisation of plants, and more particularly of that part which treats of "fertilisation by means of the style." The use which is made of the supposed fact in that work impels me to delay no longer this retractation; and I am happy to state that a renewed examination of *Campanula rotundifolia* has supplied me with very satisfactory evidence, that the same mode of fecundation obtains in this genus, that is observable in other plants, and that the doubts which I have long entertained as to the validity of Schleiden's theory have at length been almost entirely removed. I shall now give the result of my recent investigation of this genus.

The hairs which cover the upper part of the style, and the back or external face of each branch of the stigma, are simply *pollen-collectors*, and nothing more: they discharge this function admirably; and having performed it they retire, each within its own cell, by virtue (as I suppose) of some action of exosmosis, operating in conjunction with an opposite action of endosmosis on the part of the stigmatic tissue, the effect of both which actions is to produce the revolution of the branches of the stigma (which until then are erect and in mutual contact and cohesion), and to remove every obstacle which would prevent the revolute stigma from coming into contact with the mass of pollen lodged upon the style. The withdrawal of fluid from the interior of the pollen-collector will necessarily cause the fine inner membrane to shrink: it is thereby shortened, and acting with tension on the external membrane of the hair, which is elastic and somewhat horny, the latter is drawn inwards, as the sliding tubes of a telescope are made to retire into each other, until the whole of the exserted hair is retracted into its base, which forms an embedded cavity in the substance of the style. An interval of at least a day, perhaps two days, may exist between the moment of dislodgement of the pollen from the anthers and its ultimate deposition on the stigmatic papillæ. The pollen is emitted from the anthers when the flower is just opening: at this moment the anthers form a tube around the style and stigma, the latter being scarcely protruded above the tube. As the flower advances, the style is elongated to nearly twice its original length, or more, before the branches of the stigma begin to roll backwards: this elongation causes the pollen to be brushed out of the anthers, and the pollen then adheres very copiously to the style and back of the stigma; but as yet not a single grain can touch the stigmatic papillæ: this can happen only after the branches of the stigma are separated from mutual contact. Previous to the revolution of the stigma the pollen-collectors are retracted, those at the back of the stigma somewhat sooner than the rest; and by means of the revolution the surface of the stigma is brought into close contact with the pollen-grains, a sufficient number of which are thus made to adhere to the stigmatic papillæ, and to produce pollen-tubes. The pollinic tubes penetrate between the papillæ, and between the stratum which they form and a layer of vascular tissue, into the tubular central cavity of the style, which forms a channel of communication with the placentæ. The course of the pollen-tubes from the base of the style is by a sudden bend upwards into the middle of each placenta, which presents two contiguous surfaces, and thence over the whole free external surface of the placenta, to which the foramen of each ovule is closely applied. After fecundation it is not a difficult task to dissect away the ovules with a considerable length of pollinic tube, whose anterior extremity is inserted into the foramen; nor should I, after what I have already accomplished, despair of dissecting away an unbroken pollen-tube uniting the pollen-grain with the penetrated ovule. Until my recent examination of *Campanula,* I had obtained no conclusive evidence (after much pains bestowed for that very object), that the pollen-tubes ever actually penetrated the ovule; and some of my observations already published seemed to justify the rejection of much of what had been advanced by previous writers in favour of that opinion; but I have now no hesitation in admitting it as proved; and it only remains to enquire into the mode and extent of operation of the pollinic tube after its introduction to the interior of the ovule.

As a consequence of the theory of Schleiden, it is maintained by Wydler, that plants have not two sexes, as hitherto supposed; that the anther, far from being the male organ, is the female, in fact, an ovary; that the pollen-grain is the germ of a new plant; that the pollinic tube becomes the embryo within the embryo-sac of the ovule, which merely supplies nourishment and shelter to the embryo up to a certain period; and that this phenomenon is improperly termed "fecundation."

It is, on the contrary, asserted by Mirbel and Spach, that the pistil fulfils an important function in generation, inasmuch as it originates of itself the primordial utricle, which in conjunction with those utricles that it produces, gives birth to the embryo; and they conclude that phytologists are right in admitting the fecundation of plants, and in assimilating it, up to a certain point, to that of animals. They contend that the embryo-sac, as understood by Schleiden, has no real existence; and that the *utricule primordiale,* although it gives rise to the embryo, is not formed of the anterior extremity of the pollen-tube, though it would remain inert if fecundation by means of the pollen did not take place. They explain their views of fecundation by reference to the process of grafting, the cambium introduced by the pollen-tube becoming intimately blended with the cambium of the *utricule primordiale*; and according to the mode and degree of combination may be explained the formation of hybrids, some of which show the character of the male parent, others of the female, and others a mixture of the characters of both the parents.

The argument seems to depend upon the issue of the debated question whether the primordial utricle has a prior existence within the ovule, independent of the action of the ovule. It will be advantageous to reject Schleiden's figment of an introverted embryo-sac, and to substitute the simple idea of an embryonary cavity within the nucleus, prepared for the reception of an embryo. M. Ad. Brongniart contends that "in several plants, and particularly in the *Cucurbitaceæ*, he has ascertained that the *vésicule embryonaire*, considered by Schleiden to be formed of the extremity of the pollinic tube, exists in the ovule before fecundation." I cannot confirm this statement as to the *Cucurbitaceæ*, where I find only an embryonary cavity, but no contained vesicle. In *Zea Mays*, an example prominently adduced by Mirbel and Spach in proof of their position, I find indeed the organ which they designate as the *utricule primordiale*; but I recognise in it only the *quintine*, analogous to that of *Nuphar lutea*, but not extending farther than the middle of the nucleus, and of peculiar confirmation. After repeated dissections, most carefully conducted, I am unable to detect the smallest trace of a suspensor like that figured by Mirbel and Spach (Annales des Sciences Naturelles, April, 1839), and the "*grappe de très petites utricules ovoides qui couronnent l'utricule primordiale*" is not correctly represented in the plate, (fig. 11, 13, 15): it consists of larger and fewer cellules, by no means pendulous, but forming a conglomerate opaque mass of an ovate oblong figure, which appears to be intimately connected with a central canal in the interior of the "utricule primordiale," communicating with one or more roundish or oblong bodies (within the utricule) at the opposite extremity where the supposed suspensor should be visible, if it existed. The contents of the "utricule" [or quintine] cannot be satisfactorily ascertained beyond this point, by reason of their extremely delicate structure, the least pressure causing a displacement of the loose particles (termed *cambium globulo-cellulaire* by Mirbel and Spach) and a movement along the central canal; moreover, the parts are soon ruptured or greatly altered in appearance by endosmosis, while the dissection is under examination in water. It appears to me, that neither Schleiden, nor Mirbel and Spach have rightly interpreted the organ under consideration ; and that nothing positive has been advanced on either side of the question.

Mirbel and Spach mention a curious fact which has escaped the observation of Schleiden, viz., "the double point formed by the primine and secundine within the canal of the ovary." I find something even more curious than they appear to have noticed, viz., the erect position of the primine, having its foramen at the very summit, within the canal of the ovary, far removed from the foramen of the secundine, which has accompanied the nucleus, *pari passu*, throughout its campylotropous development, and is found immediately in front of the so-called *utricule primordiale ;* so that the pollinic tube (which I have not yet had the opportunity of tracing in its progress) would appear after entering the primine to pass to the foramen of the secundine by no definite course; and a special provision seems to have been made in the narrow replication of the secundine (or possibly a distinct additional membrane) which passes all round the base of the ovule within the primine, its margin partially covering the orifice of the secundine, thus forming a groove or conduit for the pollen-tube after it has traversed the interior of the primine. Mirbel and Spach lay much stress upon the absence of proof of the existence of any pollen-tube protruding from the micropyle immediately after fecundation; but it is worth while to enquire whether such proof may not be obtainable, and whether it may not have been overlooked hitherto, through imperfect acquaintance with the structure of the ovule. The subject certainly calls for further investigation. As to the suspensor, reported to have been seen by Mirbel and Spach, I would observe that whenever it is visible in the ovule of any plant, it is always in immediate connexion with the embryo, or its membranous covering, as is exemplified in the case of *Zea Mays*; if due attention be paid to fig. 16 and 19, which I cannot admit to be a metamorphosis of the "utricule primordiale:" to me it appears to be something developed within it, but in what mode remains to be ascertained.

W. Wilson.

Warrington, Sept. 28, 1847.

References to the Plate.

Tab. IV. B. Fig. 1, Pistillum of *Zea Mays*, of the natural size, before fecundation, taken from the upper part of a spike; fig. 2, longitudinal section of the germen of ditto, magnified ten times; fig. 3, the embryonary cavity, as seen in the same section, magnified forty times; fig. 4, the same, magnified about two hundred times, showing more fully and accurately the "*utricule primordiale*" of Mirbel and Spach, represented in their figures 11, 13 and 15.

BOTANICAL INFORMATION.

Scientific Mission to Thibet.

(We have now the pleasure of giving extracts from the letter of Dr. Thomas Thomson, the receipt of which was announced in our last number of the 'London Journal,' p. 28.—Ed.)

"Camp, Pugha, ten miles from left bank
of Indus, Sept. 22, 1847.

"I cannot give you our position with greater accuracy; for the maps of the country we are now traversing are by no means correct. My last letter to you was written at Dankur, in Piti, and the P.S. bore date the 4th of this month: I have therefore to render an account of my wanderings since that time. We left the Piti valley on the 5th, and crossing the range of snowy mountains, which run parallel with it on the north, by the Parang Pass, we came upon the river of that name near its source. Our observations made the elevation of the Pass to be 18,600, or 18,700 feet. We followed the course of the Parang river, at first northerly, but then, for three days, nearly due east, after which it turned south, and we crossed it to proceed to Haulé. On our road thither, we crossed the Sarak Pass, elevated about 18,000 feet, and arrived at Haulé on the 14th, where we halted two days, and started again on the 17th for the Indus, pursuing the course of that stream for two days, in a direction rather north of the west, when we turned up a ravine to the left, and reached this place yesterday. Here we spend a day, partly to make magnetic observations, and also to examine the Sulphur and Borax and hot springs which occur at this place. So much for a general sketch of our route since my last: a very few words will suffice to convey an idea of the nature and appearance of the country. Since the 5th we have not been below 13,800 feet, and almost always much higher. The country continues extremely hilly, though interspersed with numerous open plains, either perfectly flat, or with a gentle slope, and sometimes of considerable extent. The sloping plains are strewed with gravel and fragments of rock, the flat ones covered with saline efflorescence, and evidently seeming to have been the beds of lakes. Nothing can well be more barren than the mountains and gravelly plains; but among the rocky spots some interesting plants may be picked up. The principal vegetation is, however, confined to the streams, whose banks are often marshy and covered with short turf, interspersed with some remarkable species. The brushwood of the Piti river consists of *Roses, Willows, Tamarisk, and Hippophäe.* I had not met with the two former, since leaving the Parang Pass; and the *Hippophäe* which grows on that Pass is different from that of Piti. *Tamarisk* prevails abundantly at an elevation of 14,500 feet; and the *Caragana versicolor,* which affords the principal fuel of the inhabitants in these desolate regions, grows more luxuriantly than at Kunawur and Piti; though I have, as yet, found only one species of the genus. The most frequent productions of this tract are a *Crucifera,* with large fleshy cuneate leaves, which is new, unless Jacquemont discovered it, an *Artemisia*? with bright yellow flowers, and an *Atropa,* or nearly-allied plant.

We crossed the Parang Pass on the 8th Sept., being the fourth day after quitting the Piti river, and encamped at the height of about 17,000 feet. The mountains, over which we took our way, were so many masses of fragments of loose stones, and it was therefore difficult to ascertain the exact height to which plants extend. A *Lichen* grew at the very top; but the highest phanerogamous plant which came under my notice, was a small *Composita*, the *Pyrethrum roseum* of Jacquemont's Journal, which inhabited the crevices of rocks, at an elevation of 17,500 feet. Though disappointed by the sterility of the southern side of the Pass, I gathered several alpine species, when descending the northern slope and following the course of the river. The loftiest part certainly promised ill enough: a mile and a half of snow was followed by an equal length of glacier. The mountain vegetation is quite different from that of the ordinary level of the country; or, to speak more definitely, the plants of 16–17,000 feet are by no means the same as those of 14–15,000 feet. Elevation is, however, not the sole cause which influences vegetation: exposure and distance from the bottom of the valley have a marked effect. Thus *Biebersteinia odora* occurred on the Roonung Pass in Kunawur, at 14,200 feet, and was plentiful on the descent of the Parang Pass; but below 15,000 it disappeared, and though we have since continued at between 14 and 15,000 feet, I have not met with it again. The *Biebersteinia*, a minute *Astragalus*, a *Lychnis* and two *Grasses*, were the first plants which greeted me on the descent, appearing just where the glacier terminated, and they were soon followed by a *Nepeta*, four species of *Potentilla*, a *Fern*, a *Gnaphalium*, and a couple of *Carices*. By the way, the *Potentillæ* have been a particularly numerous tribe since I entered Kunawur; I think I have collected not less than twenty.

Our encampment below the Parang Pass was at above 16,000 feet, and our lowest elevation before leaving that stream, was 14,000 feet, so that we very gradually diminished our altitude in three days, which gave me a good opportunity of noting the appearance and disappearance of different plants. The former is an easy task; the latter not only difficult but impossible to be accurately done by persons who are rapidly traversing a new region; so, as my notes are still quite rough, and the changes of vegetation very frequent, I prefer letting that point alone, for the present. I have already stated that the alpine species vanish above 15,000 feet. Along the banks of streams, and in moist boggy spots, grew several kinds of *Gentian*, two of *Pedicularis*, a very small *Thalictrum*, a *Parnassia*, a *Juncus*, and a good many *Carices* and *Grasses*; while in drier places, *Dracocephalum heterophyllum*, (Benth.) two *Corydales*, a pretty *Phaca*, several *Chenopodiaceæ* and *Artemisiæ* were common.

The Sanak Pass offered much more interest, botanically speaking, than the Parang. The ascent was easier, and the mountains, covered with granite and boulders, permitted a greater amount of vegetation than could be detected among the loose angular stones and sharp slopes of the Parang. For a considerable way we traced upwards a small stream, whose turfy banks presented many pretty alpine plants, among which I may mention a *Saxifrage*, an entire-leaved *Ranunculus*, a *Delphinium*, several *Saussureæ*, a *Pedicularis*, *Thalictrum*, *Parnassia*, several *Cherleriæ* or *Stellariæ*, &c., &c. At the very top, I noticed a level gravelly spot, the elevation being certainly upwards of 18,000 feet, where grew two species of *Cruciferæ*, and only 200 feet lower down, were many other plants. The road was quite free from snow, which covered the northern exposure of the mountains to our right. One long march from the northern face of the Sanak brought us to Haulé, a monastery of Buddhist Lamas, built on a hill, to the north of a very extensive and perfectly flat salt-plain, elevated 14,000 feet, and traversed by two sluggish streams, full of fish: these rivers unite close to Haulé, and, taking a northerly course through an open valley, they fall into the Indus. We followed for nearly twenty miles the course of the stream: its banks and the plain were very saline, the quantity of salt obviously increasing as we proceeded; a fact, attested both by the eye, and by the greater predominance of *Chenopodiaceæ*, of which tribe I found four species that I had not seen before. We left the Haulé river a few miles before it fell into the Indus, but only to traverse a low range of hills, after which we regained it, some miles lower than the junction. At the spot where we struck the Indus, it was flowing sluggishly, at one and a half to two miles an hour, over a muddy bed, in the centre of a salt-plain. Its banks were singularly barren: during the twenty-five miles for which we pursued its course, I did not see so many as forty-five species of plants, a sterility which made me glad when we quitted the Indus for this ravine, which is curious and interesting in many respects. I was much surprised, on entering it, to find it filled with a miniature forest of *Myricaria,* the trees often fifteen feet high, and with stems commonly a foot in diameter, but frequently much more. The ravine is a close one, the hills rising high on both sides, and I noticed nothing remarkable in the vegetation, but the luxuriance of the *Myricariæ.* Where it joins the Indus, the elevation of the bottom of the ravine may be about 14,000 feet, and that of our present encampment, perhaps a mile and a half above any of the larger trees, is 14,600 feet. On arriving at our halting-place I was startled to find the temperature of the stream so high as 69°; and a little search evinced that all along its bed in this neighbourhood, numerous hot springs broke out, the temperature being 147½° in the hottest I have yet examined. Where our camp is placed, the ravine has spread out into a narrow plain, a quarter of a mile broad. The hot springs give out a good deal of gas, which smells strongly of sulphur, and the water is slightly tinctured with the same, but tastes, otherwise, perfectly pure and good. The surface of the plain is encrusted with salt, containing much *Borax,* and is exported to India, in a crude state, to be refined. The sulphur locality being a mile further, I have not yet visited it. The bed of the streamlet is full of matted *Zannichellia* and *Potamogeton,* growing in the most luxuriant manner; while large fish, apparently enjoying the hot water, dart about in great numbers, and in every direction.

Giah, Sep. 27th.

You will find the place, whence I now date, in any good map. Since writing the above portion, we have made such long marches, that I could not complete my letter. We are halting here for a day, partly to rest, and partly to prepare despatches for home. Our journey, for the last five days, has been very destitute of botanical interest; for the cold nights have had the effect of almost entirely drying up the vegetation. The day before yesterday we encamped at rather below 16,000 feet, on the other side of Tunglung Pass, and after a miserably cold day, snow began falling in the evening, and by next morning the ground was covered to the depth of three inches. Beyond the cold we experienced no difficulty in crossing the Pass, but of course botanizing was out of the question. The descent was rapid, and we quickly left the snow behind us, and are now at an elevation of 13,500 feet; and we expect to-morrow's march will bring us down to 11,500, so that I trust soon to enter a region where vegetation is not thus injured. So long as the species are recognizable, I consider one great object to be gained. For a month the plants have been in a bad state, too far advanced to make good specimens, indeed, mostly in fruit; but only within the last few days have they been so much injured as not to be worth collecting. There is the less reason to regret the lateness of the season, because there are few indigenous plants, comparatively speaking, in the elevated regions we have been lately traversing; and I quite believe hardly any have escaped me, unless it be a very few early spring species. And, where spring begins in June, the number of plants peculiar to that season, cannot be great.

The most interesting object that I have seen during the last few days is a Salt Lake, at the elevation of 15,000 feet above the sea. It has no outlet, (and this, I believe, to be characteristic of all salt lakes,) and occupies the centre of a plain, bounded on every side by hills, which are marked, 200 feet above the present surface of the lake, with a most remarkably distinct ancient water-mark, traceable all round the lake, and which is seen at one point, towards the south, to be connected with a valley, running in that direction, and which must have been the former outlet of the lake. All round the lake, and in some places up to within a few feet of this water-mark, there is an alluvial deposit of fine clay, containing in many parts, an immense quantity of fossil shells, all of which, except a very few specimens of a minute bivalve, belong to one, or possibly two species (for they vary considerably) of *Lymnæa*, a fresh-water shell, clearly proving that the lake was originally fresh, and that its present saline state is due to the shutting up of its outlet. No other shells occur, at present, so far as I was able to detect, at this height. I infer, therefore, that the whole country has been considerably elevated since the formation of these alluvial beds; and I can find no cause for the closing of the lake, save unequal elevation. Altogether, the locality was most interesting to me, and it well deserves the scrutiny of a good geologist. As to the sulphur, that place, too, was eminently curious; and I procured beautiful specimens of crystals of sulphur, and of various salts, whose characters and composition yet remain to be determined.

Respecting our future movements, I can tell you no more than that our course lies down the Indus. We shall remain about a week at Leh (or Ladakh) and I shall write to you, either thence, or soon after leaving that place.

There are several Poplar trees and much cultivated ground here.*

T. THOMSON.

NOTICES OF BOOKS.

PRESL, BOTANISCHE BEMERKUNGEN; *separately published from the Transactions of the Royal Bohemian Society of Sciences.* Prague. 1844.

THIS is a 4to pamphlet of 154 pages, professing to contain observations on, and especially corrections of, the determinations of plants contained in various collections generally distributed by sale or otherwise, determinations of species hitherto only designated by numbers, and characters of a considerable number of new genera and species; the collections reviewed being chiefly the South African ones of Drège, and of Ecklon and Zeyher, Sieber's various collections, and those distributed by the Wirtemburg Unio Itineraria, with a few species of Cuming, Lhotsky, and others. From the hands of a botanist of reputation, who has access to a very fair botanical library and no inconsiderable herbarium, (chiefly presented to the Prague Museum by the late distinguished Count Sternberg,) this would have been a most useful publication, had he, indeed, as he declares in his Preface, "spared no pains, time, or sacrifices, to compare figures, descriptions, and specimens." A very slight examination, however, suffices to prove how far the performance falls short of the promise. From beginning to end it shows signs of haste. Genera described as new which are evidently very well-known ones, with which they are not even compared; new species established upon insufficient or imaginary distinctions; hundreds of specific names given to plants existing in collections with numbers only, (or supposed false names,) without any diagnosis or character, and, therefore, *probably* without much critical examination; many names corrected in one collection by the names given in another, without ascertaining whether such are correct: these are all indications rather of a desire to attach one's name to as many species or synonyms as possible, than to benefit science.

---

* Since the above was sent to press, we have received another highly interesting letter from Dr. Thomson, describing the route to Leh and thence to "Nabra Valley," where they were encamped "20th Oct., 1847."

In support of these remarks let us take the three first genera proposed as new; 1, *Ionidiopsis*, p. 13, is precisely *Noisettia*, Kunth, (not of Martius, who included *Anchietea*,) and the species published *I. fruticulosa*, Presl, is (judging from the description) the common *N. longifolia*, for which St. Hilaire gives also the station near Rio Janeiro. 2, *Acrossanthus*, p. 22, would indeed be a genus "novum et singulare," if referred, as our author proposes, to *Guttiferæ*, "non obstantibus phalangis stamineis polyandris petalisque oppositis, stylis quinque et stigmatibus orbiculatis planis;" but, take a nearly allied order in which these characters occur, and turn to a common, well-known, and frequently figured South American genus, and to one of its commonest forms, and *Acrossanthus Lhotzkyanus* becomes *Vismia Guianensis*, or rather that Brazilian form, which, though referred by St. Hilaire to the true *V. Guianensis*, has been distinguished by Gardner, apparently on sufficient grounds, under the name of *V. Hilairii*. 3, *Dicranopetalum*, p. 24, is correctly referred to *Sapindaceæ Paullinieæ*, and distinguished from *Urvillea* and *Serjania*, but why not compared with *Toulicia*, Aubl.? exceedingly well characterised by Cambessèdes in his 'Memoir on Sapindaceæ,' with which it will be found to be identical. This Brazilian species has been published by Casaretto in his 'Decades,' under the name of *T. Brasiliensis.*

Amongst those of Presl's species which we have had occasion to examine, we have identified many also with well-known older ones, and many more still are distinguished on grounds, which in our opinion, are insufficient; but on this head there is, we are aware, much disagreement amongst systematic botanists; and as several of the new species are really valid and well described, it would be useless here to enter into details without a careful critical examination of the whole, which would take much more time than the author can possibly have bestowed on the compilation. In his synonyms he has succeeded in detecting some blunders of others; although he not unfrequently corrects one blunder by another. If, therefore, this memoir is one which must be consulted on account of the right of priority acquired for all really new species there described, we would not recommend any of the determinations of species to be accepted without verification; nor should we deem it necessary to adopt Presl's name where unaccompanied by any character or distinctive indications.

With regard to the date of the work, we see that the 1st of April, 1843, is affixed to the preface; although it was only laid before the Society on the 21st December, 1843. The date of printing is 1844; but it can scarcely have been published in that year, as we have heard it was not in booksellers' catalogues till 1846; thus the priority of names over those published in the commencement of 1845 might become questionable.

BOTANICAL LABELS; *a series of* Botanical Labels *for the* Herbarium, *adapted to the respective Floras of* Smith, Hooker, Lindley, and Macreight; *including one for every plant recognized as indigenous to the* BRITISH ISLANDS. London, Pamplin, 1848. Price 3*s.*

This is a rather stout 8vo volume of 325 pages, each leaf being occupied on one side with fourteen neatly printed labels, containing the Natural Order, the Linnæan Class and Order, the generic, specific, and common name of the plant, together with the synonyms of the botanists whose names are mentioned in the title. To these is added the general habitat; and blank spaces are left for the precise locality, the time of gathering, and the name of the collector. "As each plant has one or more labels assigned to it, whenever the writers above-mentioned differ in their nomenclature, all will be able to select that of their favourite text book, while the synonyms attached will show the arrangement adopted by the other three authorities, and thus, to the less advanced student, tend, in some degree, to increase the facilities of botanical intercourse."

We gladly recommend this collection of labels to every person who forms a British Herbarium; for the neatness of printed labels over written ones is manifest to all, and they yet bear, or ought to bear, enough of the writing and the name of the collector to carry the stamp of his authority.

SYNOPSIS HEPATICARUM; auctoribus GOTTSCHE, LINDENBERG *et* NEES AB ESENBECK. Hamburg. 1847.

This valuable work, the earlier portion of which we noticed in the fourth volume of the present Journal, is now happily brought to a conclusion in one thick volume of upwards of eight hundred pages, with a copious Index, and a *Supplement* of no less than one hundred and eighty-one pages "species complectens et synonyma præstantiora, quæ dum liber hic imprimebatur ab aliis descripta innotuerunt;" that is, during a period of three years only. Such is the rapid progress in the present day of this department of Botany. A *Conspectus Generum* shows that the learned authors have divided the *Hepaticæ* into five tribes; viz., 1. *Jungermanniaceæ*; 2. *Monocleæ*; 3. *Marchantieæ*; 4. *Anthoceroteæ*; 5. *Ricciæ*; and into seventy-two Genera. It is a work that must be in the hands of every student of Cryptogamic Botany, whatever may be his views respecting the proper limits of genera and species.

Notices sur les PLANTES RARES *cultivées dans le Jardin Botanique de* Genève, *par* AUGUSTIN-PYRAMUS *et* ALPHONSE DE CANDOLLE. Extrait des Memoires de la Soc. de Phys. et d'Hist. Nat. de Genève, avec l'addition d'une table des matières et d'une table alphabétique des noms d'espèces. Genève, 1823–1847. 4to.

We regret to see the present "Notices" brought to a conclusion with the tenth fasciculus; the whole forming one volume, each number, however, being separately paged, and including, besides many plates, more or less coloured, full descriptions and histories of one hundred and thirty-eight new or rare plants of the garden of Geneva, drawn up by two of the most distinguished botanists, father and son, of the present century. The present number contains, 1, *Althæa laxiflora,* n. sp.; 2, *Brassica longiloba,* n. sp.; 3, *Crambe grandiflora,* DC.; 4, *Eriostemon scabrum,* n. sp.; 5, *Galega officinalis,* L.; and *G. Persica,* Sw., (showing that they are one and the same); 6, *Lessertia brachystachya,* n. sp.; 7, *Peristeria Barkeri,* Batem.; 8, *Pomaderris pyrrophylla,* Stend.; 9, *Scævola multiflora,* Lindl.; 10, *Sedum præaltum,* n. sp.; 11, *Selago cinerea,* L. Suppl. Two plates, representing three plants, accompany the number.

SCHNIZLEIN; *Iconographia Familiarum Naturalium Regni Vegetabilis.* Heft V. Bonn.

The student of botany will be glad to know that this useful work, which we have already alluded to, (vol. iii. p. 111), as a substitute for the more elaborate and more original 'Iconographia Generum Plantarum,' of Endlicher, is continued. Fasc. V. is the latest portion we have received, but it bears no date; and when it is considered how tardily our booksellers procure continental works in general, and especially German ones, we cannot be sure that more of it may not be issued in Germany. The present Fasciculus contains illustrations of the following Natural Orders. Tab. 55, *Liliaceæ* (*Hyacintheæ, Tulipeæ*); *t.* 55, *b. Liliaceæ* (*Asphodeleæ*; t. 55, *c. Liliaceæ* (*Asparageæ*); t. 55, *b. Liliaceis affines*;

t. 59, *Hydrocharideæ*; t. 61, *Irideæ*; t. 68, *Scitamineæ*; t. 69, *Marantaceæ*; t. 70, *Musaceæ*; t. 71, *Najadeæ*; t. 73, *Typhaceæ*; t. 77, and 77, *a*, t. 77, *b*, *Palmæ*; t. 79, *Gnetaceæ*; t. 80, *Chlorantheæ*; t. 81, *Piperaceæ*; t. 82, *Saurureæ*; t. 85, *Podostemmeæ*: t. 86, *Casuarineæ*.

DUNAL; *Petit Bouquet Mediterranéen.* 4to. Brochure, Montpellier.

Under this modest title the learned Professor of Montpellier has described and figured six new, or little known, plants of the Flora of the Mediterranean region, "qui s' étend des rives du Portugal baignées par l'ocean Atlantique, jusqu' aux confins de la Perse et peut-être même d'Affghanistan. Elle a sur toutes les autres le privilège d'avoir été le berceau de la Botanique. C'est en effet à Athènes que Theophraste, il y a 23 siècles, jeta les premiers fondements de la physiologie végétale et de la phytographie, et c'est à Anazarbe, en Cilicie, que Dioscoride écrivit, trois ou quatre siècles après, la première histoire des plantes employées en médecine; livre qui a eu le privilège d'être presque le seul livre de botanique des médecins jusqu' au siècle dernier, et qui est encore aujourdhui presque le seul des pays qui sont soumis à l'Islamisme." Since that remote period, continues the author, the vegetation of every part of this vast region has been often explored. Portugal, Spain, and the Balearic isles, the kingdoms and regencies of the north-west of Africa, as well as of the south of France and Italy, the Ionian islands, Greece, as well as Egypt and Asia Minor, have been visited by numerous and talented botanists; and still many vegetable productions of these countries remain to be discovered and described; so great is the number of species of plants, and such the amount of time and labour necessary to acquire a complete knowledge of those of any country.

In proof of this assertion M. Dunal proceeds to describe *Helianthemum multiflorum*, Saltzm., from Tangiers; *H. calycinum*, (Cistus calycinus, L.) discovered in Bæotia, by Clusius, and rarely detected since; *Cistus Clusii*, Dun., of Spain and Barbary; *Helianthemum pomeridianum*, Dun., from Algeria; and *Narcissus Clusii*, Dun., also from Algeria.

Prodromus Monographiæ FICUUM; *scripsit* F. A. G. MIQUEL, Botanices Professor Amstelodamensis.

(TAB. III.)

(*Continued from page* 78.)

IV. SYCOMORUS, *Gasparr, l. c. p.* 86. *Charactere mutato.*

Flores in *receptaculo* turbinato vel pyriformi monoici. *Masc.* sessiles, *perigonio* triphyllo, raro diphyllo, *staminibus* 1–plerumque 2, quandoque 3. *Fem.* pedicellati vel sessiles, *perigonio* 3–polyphallo, *ovario* sessili, *stylo* laterali stigmate elongato recto carinato-lanceolato vel dein clavato-incrassato terminato.

Arbores sæpe ingentes longævæ, *foliis* alternis rotundato-cordatis vel oblongis, integerrimis vel serratis, glabris, puberulis vel asperis, *receptaculis* e ramis vetustioribus, varie dispositis, sæpe racemosis, basi bracteis involucratis, glabris vel pubescentibus.

1. Sycomorus *antiquorum Gasp. l. c.* (Ficus Sycomorus, *Linn.* Fic. Syc. vera, *Forsk. Flor. Aeg. Arab. p.* 180–182. *Plures auctores excludendi, qui Sp. affines confundentes, diagnosin falsam exhibent.*) Foliis ovatis obtusis basi cordatis utrinque 4–5-costatis integerrimis repandis vel subangulatis; demum glabriusculis et lævibus, petiolis ramulisque subhirtellis, receptaculis supra ramulos aphyllos e trunco vel ramis vetustioribus protrusos racemosis pedunculatis turbinatis junioribus molliter tomentellis, præcocibus ex Forsk. viridibus insectiferis, æstivalibus et serotinis flavescentibus seminiferis.

HAB. Arbor in *Ægypto* frequentissima, plantata in littoribus et ad vias juxtà pagos, ramos diffundens tantæ latitudinis, ut arbor adulta abumbret spatium circuli 40 passuum diametri. Adeoque una series arborum sufficit a singulo latere viarum; *Forsk.* In vallibus saxosis prope *Djeladgeranne,* fructibus ad truncum et ramos majores (Schimp. iter Abyss. Sect. III. n. 1834!) Cairo (*Sieber!*).

Ramuli, petioli foliaque nascentia utrinque præsertim in nervo medio hirtella. Hæc 12–13 cent. longa, 9–11 lata, *petiolis* 3–4½ cent. *Stipulæ* carinato-lanceolatæ, dorso apiceque hirsutæ.

Forskalius l. c. *receptaculorum* varias species et florum structuram accurate investigavit, quibus observationibus fretus *Cl. Gasp.* Sycomori genus exstruxit. Ad nostra usque tempora affines quæddam sp. cum hac confundebantur, quarum descriptiones inter sequentes dedi. In sp. ad Cairo lectis vidi receptacula subglabra basi tribracteata intus sub ore bracteis oblongo-spathulatis rigidis serratis (quas *Forsk.* integerrimas observavit) clausa, cæterumque bracteolata. *Fl. masc.* non reperi. *Fem. Perigonium* 3–4 phyllum, *phyllis* vel liberis (in fl. sess.) vel in tubum basi coalitis, e basi angusta lanceolato-linearibus sursum dilatatis serratis, inæqualibus hyalino-fuscescentibus. *Achenium* immaturum breviter stipitatum dimidiato-ovatum fuscum, *stylo* laterali, *stigmate* subclavato terminato.

2. Sycomorus *rigida*, n. sp. Foliis modice petiolatis rotundato-ovatis vel ellipticis obtusis basi leviter cordatis integerrimis trinerviis et utrinque 2–3 costulatis, rigido-coriaceis supra glabris lævibus nitidis demum fissuris asperis, subtus pilis teneris supra nervos inspersis, vetustioribus asperulis et sublacunosis, stipulis basi dorsoque incavo-hirtellis, receptaculis obovato-urceolatis glabriusculis.

Hab. E regno Sennaar (*Kotschy*, n. 227 !), *Mascate* (*Aucher Eloy*, n. 1319 !).

Ramuli fere prorsus glabri; *petioli* pilis sparsis longis patulis deciduis instructi, serius squamulosi 1–2 cent. longi. *Folia* 5–6 ½ cent. longa, 3–5 lata, æquilatera, majora rotundato-ovata vel fere obovato-rotundata, minora lato-elliptica, supra læte viridia nitida, serius epidermide rimosa aspera, subtus fuscescentia; costæ e nervo medio utrinque e basi 1, ad ⅔ alt. perductæ, reliquæ 2–3 inde ab ½ alt. patulo-adscendentes; anastomoses parum prominentes. *Stipulæ* ovatæ acutæ convolutæ 8 mm. longæ. In *sp. ex Hb. Auch. Eloy, folia* supra asperrima, rigidiora. *Receptaculum* adest fere florens fere 3 cent. longum crassum, monoicum.

3. Sycomorus *trachyphylla*. (Ficus trachyphylla *Fenzl in Flora*, 1844, *p.* 311. *nomen.*) Foliis breviter petiolatis ovatis ellipticis obtusis, basi leviter cordatis, integerrimis vel repandis trinerviis et paucicostatis rigido-coriaceis utrinque epidermide rimosa asper-

rimis, supra in nervis majoribus pilosis, subtus lacunoso-reticulatis in nervis venulisque hirtello-scabris, stipulis sericeo-hirtis, receptaculis. . . . . ?

HAB. Fazokee (*Kotschy, n.* 518 !).

Præcedenti manifesto affinis et ideo huc relata. *Rami* glabri et læviusculi; *ramuli* præsertim versus petiolorum insertionem subhirtelli. *Petioli* antice canaliculati parce pilosi· ½–1 cent. longi. *Folia* 5–10 cent. longa, 3½–7 lata, pallide viridia, juniora in nervis majoribus pilosa, dein glabrata, verruculis et præsertim epidermidis fissuris asperrima, subtus pallidiora et asperrima, pilis crebrioribus; costæ utrinque 3–4, quorum 1 e basi ad ½ alt. perducta, omnes anastamosibus crebris junctæ. *Stipulæ* 8 mm. longæ.

4. Sycomorus *panifica.* (Ficus panificus, *Delile in Ann. d. Sc. Nat.* 2. *sèr. tom.* xx. p. 94.) Foliis ovatis, elliptico- vel lanceolato-ovatis acuminatis, majoribus inæqualiter et remote dentato-serratis, minoribus subintegerrimis, coriaceis, trinerviis et pauce-costulatis, adultis glabris, petiolis ramulisque puberulis, stipulis ovato-lanceolatis dense sericeis, receptaculis supra ramulos confertis pedunculatis subglobosis præter verticem glabris. Tab. III. A.

HAB. Locis aquosis vallium angustarum ditionis Memsack, 27 Dec., 1837 (*Schimper! Pl. Abyss. Sect.* 1.); nomen Abyss. *Choddo.*

Petioli 1½–2 cent. longi antice canaliculati; tomentelli. *Folia majora* 12–16 cent. longa, 7–7½ lata, basi rotundata, vel subcordata rigide coriacea, attactu vix prorsus lævia, *nascentia* subtus in nervis parcissime puberula, acumine brevi-lanceolato recto integerrimo, dentibus valde inæqualibus, majoribus valde dissitis; e nervo medio utrinque 4–5 costæ, quarum una e basi alte adscendens; reliquæ, remotius ortæ, prominentes, anastamosibus tenuissimis. *Stipulæ* 1½–2 cent. longæ. *Receptacula* supra ramulos (aphyllos?) conferta, gemina?, *pedunculis* tomentellis 1½–2 cent. longis, deinceps glabratis, 1½–2 cent. in diam. glabra lævia, ore prominulo puberula, basi bracteis 3 suffulta, intus sub ore bracteata, attamen valde destructa. *Fl. fem.* perigonio 3–4-phyllo, *phyllis* inæqualibus lanceolatis filiformi-attenuatis, postea latioribus et obtusiusculis, achenium amplectentibus, fuscis, nitidis, crassiusculis.

Ovarium obovatum, *stylo* basilari, *stigmate* pro varia ætate vario, primum carnoso clavato una facie sulcato, serius abbreviato, sensimque truncato-capitellato. *Achenium* obovatum, e perigonio exsertum, purpureo-fuscum; *testa* crustacea.

Tab. III. A. *Sycomorus panifica*, n.m. cum parte infloresc. *a*,; *b*, fl. fem. alabastrum; *c*, idem florens; *d*, pistilla; *e*, stigma; *f*, achenium; a.m.

5. Sycomorus *Schimperiana*. (Ficus vallis Choudæ, *Delile l. c. p.* 94.) Foliis rotundato-ovatis acutiusculis, basi æquali leviter cordatis, versus apicem inæqualiter dentato-serratis coriaceis utrinque glabris, trinerviis et utrinque 2–3 costatis, stipulis lanceolatis acutis tenerrime puberulis, receptaculis pedunculatis subglobosis (maturis) glabris vel hic illic subpuberulis, pedunculo petioloque subsquamulosis.

Hab. Abyssinia (*Schimper! in Hb. Hook. no. deperd. n.* 1280?), Beligner, in valle Chouda (*Galinier, apud Delile, l. c.*)

Arbor magna; fructus edulis. Præcedenti proxima, foliis brevioribus et latioribus diversa. *Rami* teretes; *ramuli* juniores glabri subfurfuracei. *Petioli* 2–4½ cent. longi. *Folia* 9–13 cent. longa, 7–10 lata, utrinque ut videtur pallide viridia, glabra, lævia; basi integerrima vel repanda; cæterum inæqualiter dentato-serrata; costa e basi utrinque adscendens supra ½ alt. perducta; sequentes infra ½ alt. ortæ, supremæ prope apicem, omnes versus margines patule adscendentes, subtus prominentes et parce anastomosantes. Stipulæ 2 cent. long. lineari-lanceolatæ, sub lente puberulæ. *Receptaculum* (cujus situs non satis constat) 5½ cent. in diametro, ore subpervio.

6. Sycomorus *Thonningiana, Miq. in Hook. Flor. Nigrit.*

Hab. Mont. austro occid. (500′) ins. St. Vincent ad Prom. viride in plantatione, m. Junio, 1841 (*Vogel.n.* 78! et 78*C.*!); in m. *Virede* ibid (*n.* 76, *in Hb. Hook.*)

7. Sycomorus *Vogeliana, Miq. in Hook. Flor. Nigrit.*

Hab. Fernando Po, Nov. 1841 (*Vogel. Niger Exp. n.* 179!) Quorra (*id. no.* 4!).

8. Sycomorus *Guineensis, Miq. in Flor. Nigrit.*

Hab. Cap. Palmas et . . . . . (*Vogel, n.* 48! *et* 27! *Hb. Hook, Jul. et Aug.* 1840.)

9. Sycomorus *Capensis*. (Ficus capensis, *Thunb. Fic. p.* 13, *Vahl. Enum.* II. p. 197. Fic. Lichtensteinii, *Link. Enumer.* II. p. 451.) Foliis ovatis vel ovato-oblongis apice attenuato-obtusiusculis, basi rotundata vel subemarginata integerrimis, cæterum grosse dentato-serratis dentibus sinubusque obtusis, membranaceo-coriaceis, glabris, lævibus, petiolum ter quaterque superantibus, receptaculis supra ramulos laterales aphyllos racemosis pedunculatis subglobosis. Tab. III. B.

Hab. Prom. B. Spei (*Thunb.*, *Drège!*), Port Natal (*Krauss, n.* 265 !)

Rami petiolique glabri; hi 1–2½ cent. longi. *Folia* 5–8 cent. longa, 3–4 lata, subtus pallida. *Receptacula* intus floribus dense onusta. *Fem.* pedicellati vel subsessiles, *perigonio* clauso subclavato 3-phyllo, *phyllis* 3 concavis imbricatis fuscis. *Ovarium* obovatum inæquilaterum, *stylo* laterali, *stigmate* destructo. *Achenia* oblique obovata. Unum vidi *fl. masc.*, clavatum clausum, phyllis 3 obovato-spathulatis concavis. *Stamina* 2, subinæqualia, *filamentis* brevibus, connectivo crasso, dorso sub angulo acuto prominulo, loculis 2 anticis pallidis. Cl. Kunth folia in sp. culto subtus pilosiuscula vidit (*Ind. Sem. H. berol.* 1846, p. 22.)

Tab. III. B. *Sycomorus Capensis*, folium n.m.; *a*, fl. masc.; *b*, stamen; *c*, fl. fem. fere maturus, a.m.

10. Sycomorus *gnaphalocarpa*. Ficus gnaphalocarpa, *Steudel in Sched. Schimp. H.Abyss. Sect.* II. *n.* 874.) Ramulis nascentibus circa nodos petiolisque hirtis, foliis breviter petiolatis obovato-ellipticis acutiusculis, basi leviter cordatis, præsertim margine exteriore serrato-denticulatis, supra asperiusculis inque nervo hirtellis, subtus scabriuscule puberulis, subtrinerviis costulisque utrinque 2–3-patule adscendentibus, receptaculis pedunculatis obovato-globosis basi leviter attenuatis sericeo-hirtellis, involucro triyhyllo.

Hab. Ad montium latera versus fluvium Tacazze infra Dscheladscheranne, 1 Maii, 1840. (*Schimper!*)

Arbor magna? *Rami* teretes læves glabri, foliorum cicatricibus confertis tuberculati. *Petioli* 5 mm. longi, antice canaliculati. *Folia* 5 cent. longa, 3 lata, æquilatera. *Stipulæ* incavo-pubescentes. *Receptaculorum Situs* in sp. supp. haud satis liquet; ramulo aphyllo inserta videntur. *Pedunculi* pubescentes sensim glabrati nunc angulati 1–1½ cent. longi. *Involucri* phylla 3 ovata parva puberula decidua. *Receptacula* in brevem stipitem constricta, ore bracteis parvis concavis crassiusculis fere occlusa, 1½ cent. in diam., intus sub ore bracteis oblongis obtusis instructa. *Flores* plerique *feminei*, pauci superiores *masculini*. *Fem. Perigonium* hyalinum tenerum ægre perscrutandum, irregulariter triphyllum, *phyllo* uno plerumque bifido, *omnibus* basi subcohærentibus angustis irregulariter pauci-serratis, in alabastra omnia coalita videntur ita ut hoc juniore ætate sit vesiculosum, serius rumpens. *Ovarium* oblique oblongo-obovatum fuscescens duriusculum, *stylo* ex apice laterali vel demum ventrali brevi in *stigma* basi tumidulum carnosum lanceolatum subcochleatum angustum vel magis dilatatum desinente. Stigmata, forma variabilia, omnia fere inter se cohærentia attamen separabilia. *Masc. Perigonii* triphylli phylla concava elliptica. *Stamina* 2.

11. Sycomorus? *riparia*. (Ficus riparia, *Hochst. in Sched. Schimp. Fl. Abyss. sect.* III. n. 1585.) Foliis elliptico- vel oblongo-lanceolatis lanceolatisque obtusiuscule attenuatis coriaceis, præsertim subtus punctulato-subasperulis integerrimis, trinerviis et utrinque 4–5 costulatis, stipulis parvis ovatis acuminatis supra convolutis dorso sericeis, receptaculis ramulos aphyllos racemosis breviter pedunculatis ovatis basi in stipitem brevem constrictis cum pedunculo subpuberulis.

Hab. Ad rivos in districtu Mandel, 20 Apr. 1841. (*Schimper*!)

"*Arbor* ingens, *fructibus* ad truncum et ramos crassiores." *Folia* longiuscule petiolata, 8–10 cent. longa. *Receptacula* ceraso paullo minora superne aliquid attenuata, basi *bracteis* 3 parvis deciduis instructa, ore pluribus occlusa, intus bracteata. *Flores* plerique destructi; *perigonia* 3-phylla, phyllis inæqualibus.

Obs. Dubia quodammodo in hoc genere hæc species mihi videbatur, cum folia ab omnibus congeneribus multum differant. Receptacula autem procul dubio ad sycomori speciem pertinent cum autem hæc a ramo foliifero sejuncta sint, suspicio orta est, num folia illa huc revere pertinent.

12. Sycomori *species* videtur, *Sieb. Fl. Maurit.*, (*n.* ?); sed ob receptacula deficientia nondum describenda.

Obs. Ficus Dahro, Delil. l. c. cujus specimen teste cl. Hochstetten (*Flora*, 1844, p. 99.) in coll. Schimp. sect. 1. innominatum exstat, a me non visa, cum *Syc. panifica* atque *Schimperiana* comparanda.

Species hujus generis a me nondum visæ, verisimiliter huc referendæ.

1. Ficus *Sur*, Forsk. l. c. p. 180. Foliis lanceolatis repandis glaberrimis basi subcordatis.

HAB. Arabia. (*Forsk.*)

Arbor Sycomoro similis. *Rami* apice villosi. *Folia* latiusculo-lanceolata, dentato-repanda, subcoriacea, lævia, subtus reticulata, pallida. *Petiolus* subtus villosus. *Stipulæ* villosæ. *Fructus* prope truncum conferti, ovi columbini magnitudine. Forsk.

2. Ficus *lateriflora*, Vahl. Enum. II. p. 197; (F. morifolia, *Lam. Encycl.* II. p. 499.) Foliis cordato-ovatis acutis glabris, fructibus globosis pedunculatis.

HAB. Ins. Borboniæ.

Folia obtuse serrata, vix scabra, tripollicaria, facie foliorum Mori. *Fructus* in ramorum parte nuda sparsi.

3. Ficus *mauritiana*, *Lam. l. c.* p. 499. (F. obtusata Link, *Enum.* II. p. 450.) Foliis cordato-ovatis subtus tomentosis, asperis, ramis fructigeris nudis dependentibus, fructibus turbinato-globosis.

HAB. Ins. Borboniæ. (*Commers.*)

Folia 6–7-pollicaria. *Fructus* magnitudine nucis juglandis, basi calyce 3-phyllo. *Pedunculi* gemini (Lam.) *Rami* apice villoso-tomentosi, sordide flavescentes. *Folia* spithamea, ovata, basi cordata, grosse serrata, acuminata, supra lævia, subtus flavescenti-villoso-subtomentosa, utrinque venosa. *Petioli* 3-pollicares, villoso-subtomentosi. (Vahl. l. c. p. 196.) Quam *Vahlius* citat *Hort. Mal.* Tab. (III. Tab. 61.), et alia sp. ex ins. Philippinis certo quidem huc non referendæ. An. huc Willd. Hib. n. 19310?

4. Ficus *Forskalii*, Vahl. Enum. II. p. 196. Foliis cordato-ovatis (serratis) utrinque scabris petiolo longioribus. Ficus morifolia, Forsk. l. c. p. 179.

Hab. In Arabia. *Folia* semispithamea, acuta, alterna. *Stipulæ* lineari-lanceolatæ.

5. Ficus *Taab.* Forsk. l. c. 219. "Foliis ovatis petiolatis conjugatis," nisi olim ex nomine Arabico recognescenda, semper dubia, probabiliter ex ordine excludenda. *Arabia.*

6. Ficus *Chanas,* Forsk, l. c. p. 219. Foliis cordatis scabris. In montosis *Arabiæ.* Sycomoro similis. Fructus edulis. Anne *Sycomorus trachyphylla*?

7. Ficus *umbellata,* Vahl. l. c. p. 182. Foliis exacte cordiformibus acuminatis glabris, pedunculis tri- quinque-umbellatis.

Hab. In Guinea (*Thonning.*)

"Arbor alta, patentissima, *ramis* sparsis vel verticillatim subadproximatis, *ramulis* teretibus, glabris. *Folia* sparsa, paullo longiora quam lata, albido-costata, tenuissime reticulata, subtus læte viridia, quadri- septem-pollicaria. *Petiolus* dimidia folii longitudine. *Pedunculi* in ramis adultioribus pollicares. *Calyx* bifidus. *Fructus* globosus, tuberculo umbilicatus, glaber, viridis, magnitudine pruni." *Thonn. l. c.*

(*To be continued.*)

Contributions to the Flora of GUIANA. *Enumeration of Plants collected in British, Dutch, and French Guiana, by* SIR ROBERT *and* RICHARD SCHOMBURGK, DR. HOSTMANN, M. LEPRIEUR, *and others.* *By* GEORGE BENTHAM, *Esq.*

Since the commencement of the publication of Sir Robert Schomburgk's collection in former volumes of this Journal,* very considerable additions have been made to them by himself and brother, during their last visit to British Guiana. Dr. Hostmann has also supplied our Herbaria with above a thousand species from Surinam, and I have obtained from various sources a considerable number of those collected in French Guiana, and it has

---

* Hook. Journ. Bot. vol. ii. p. 38, 127, 210; vol. iii. p. 99, 321. Lond. Journ. Bot. vol. i. p. 193; vol. ii. p. 42, 359, 670; vol. iv. p. 622; vol. v. p. 351.

occurred to me that it might be advantageous to modify, in some respects, the plan hitherto followed in describing Schomburgk's collections. Instead of confining myself to them exclusively, I propose henceforth to give a complete enumeration of all the species of each group hitherto published as natives of Guiana, commencing with those natural orders not touched upon in my former papers. In this enumeration the species which I do not possess, or have not examined myself, will be found distinguished by an asterisk (*), the stations thus given on the authority of others being enclosed in a parenthesis. There are also a few species of Sir R. Schomburgk's first collection which were gathered in North Brazil, on the Rio Negro and the Rio Branco; these, although not from Guiana, will be enumerated as before, but without prefixing any number to them, and they will, moreover, be distinguished by a cross (†) before their names.

The labels of Schomburgk's second collection have generally two numbers; of these the *first* is that of Sir Robert Schomburgk, the *second*, in a parenthesis, is that transmitted to Berlin by Mr. Richard Schomburgk, and corresponds, it is believed, with those given in Dr. Klotzsch's papers on Equatorial American plants in the Linnæa. But with regard to all these numbers, useful as they are in the determination of distributed collections, and strongly as it is to be recommended to monographists and other describers of plants, not to neglect them, it must be borne in mind that they are liable to many mistakes. The collections are usually hastily sorted for distribution, and distinct species, bearing a general resemblance to each other, are often confounded under one number; labels bearing numbers only, when accidentally mis-placed in herbaria, afford no clue to correct the mistake, and even in publication, a clerical or typographical error in a figure is more apt to be over-looked than any other. A specimen cannot, therefore, be considered as absolutely authentic merely because it bears a corresponding number to one published from the same collector, unless it is found really to agree with the description, or has been actually compared with the individual described; although in nine cases out of ten, or even in a much greater proportion, these numbers are a safe and useful guide.

MALPIGHIACEÆ.

In the determination of the plants of this order, I have scrupulously followed the admirable monograph of Prof. A. de Jussieu, where the genera are so well established that there are but few cases where a fair specimen, even without the fruit, may not be satisfactorily referred to its genus. The identification of species is much more difficult, especially where the specimens do not show both flower and fruit. In some cases I have been assisted by authentic specimens determined in my herbarium by M. de Jussieu himself; in others, by his accurate and elaborate descriptions: the chief doubts are in regard to some of the old-established species, which M. de Jussieu has considered as sufficiently well characterised by previous authors, and to which he has unfortunately not added his own diagnosis or descriptions.

1. Byrsonima *verbascifolia, Rich. A. Juss. Malp.* p. 26.—Dry savannahs, British Guiana, *Schomb. 1st Col.* n. 91, *2nd Col.* n. 259 (447); Surinam, *Hostm.* n. 1296. (Cayenne, *Aublet* and others.) All the Guiana specimens I have seen belong to the common variety figured by Aublet, with very cottony leaves, and the ovary thickly covered with hairs.

* 2. B. *eriopoda, DC. A. Juss. Malp.* p. 26. (Cayenne? *DC.*)

3. B. *rugosa,* sp. n. foliis obovatis basi acutis bullato-rugosis supra glabratis v. ad venas pulverulentis subtus rufo-tomentosis et ad costam hispidis, stipulis petiolo longioribus, calyce 10-glanduloso, antheris parce hispidis, connectivo ultra loculos producto, ovario apice hirsuto.—British Guiana, *Schomb. 2nd Col.* n. 870 (1379).

Rami crassi, novelli pilis rufis dense hispidi, adulti glabrati. Folia 5–7 poll. longa, 2–3 poll. lata, apice sæpius breviter acuminata, basi longiuscule angustata in petiolum brevem, supra glabra, nisi ad basin costæ mediæ pilulis minutis pulverulenta, nitida, inter venas bullata, margine revoluta, subtus undique tomento brevi rufescentia, costa venisque primariis valde elevatis et uti petiolus

pilis longis rufis plus minus hispidis. Stipulæ axillares (ex 2 coalitæ) 8–9 lin. longæ, extus pilosæ. Racemi ut in *Coleostachyde* basi bracteis 2 stipulæformibus vaginantibus stipati, semipedales, fere a basi floriferi, rhachi pedicellisque ferrugineo-tomentosis. Bracteæ et bracteolæ omnes e specimine delapsæ. Calycis glandulæ magnæ, laciniæ extrorsum revolutæ vix lineâ breviores. Petala valde inæqualia, majora calyce plus triplo longiora. Filamenta brevissima, basi pilosa et coalita. Ovarium apice dense, basi parce pilosum. Fructus non vidi.

This agrees in many respects with the character of *B. stipulacea* of A Juss., but in that species the calyx is without glands, which are very conspicuous in the present one.

4. B. *ferruginea, Kunth. A. Juss. Malp.* p. 37. Var. β. *macrophylla*, foliis 5–8 poll. longis, supra parce præsertim ad costam pubentibus, subtus pube densiore ferrugineis, antheris glabris. —British Guiana, *Schomb. 2nd Col.* n. 811 (1408). Ejusdem, var.? γ. *Moureila*, foliis 2½–3½ poll. longis, antheris pilosis.—Guiana and Trinidad, *Anderson.*

The variety β is remarkable for its large leaves and well-furnished raceme, and I can find no hairs on its anthers, otherwise it agrees well with the descriptions of B. *ferruginea*. The var. γ has precisely the foliage of some forms of B. *crassifolia*, but the ovary is densely clothed with rusty-coloured hairs. It includes, probably, the hairy-fruited *Malpighia Moureila* of Aublet.

5. B. *crassifolia, Kunth. A. Juss. Malp.* p. 37.—British Guiana, *Schomb. 1st Col.* n. 57; Cayenne, *Leprieur, Martin*; (Surinam, *Focke.*) This is said by Schomburgk to be a low, stunted tree, frequent on the savannahs of the Parime and Conocon mountains, known under the Caribe name of *Moulae-ie.* The bark is used at Fort S. Joaquim for tanning, and by the Indians for painting paddles, arrow-points, etc.

β., pube tenuiore, in folio adulto sæpe evanido.—A stunted shrub, on dry savannahs, Parime mountains and Pirarara, *Schomb. 1st Col.* n. 712, and *2nd Col.* n. 266 (389); Surinam, *Hostm.* n. 810. The specimens from Schomburgk's 2nd Col. have the leaves longer, and the reticulations finer, and may possibly be the

Malpighia altissima of Aublet, which Jussieu considers as scarcely distinct from B. *crassifolia.*

6. B. *Hostmanni,* sp. n., foliis oblongis v. ovato-lanceolatis acuminatis basi acutis subcoriaceis supra glabris subtus adpresse ferrugineo-puberulis, venis crebris subparallelis, calyce 10-glanduloso, antheris glabris connectivo ultra loculos breviter producto, ovario glaberrimo. B. *lanceolata, Miq. Linnæa,* 18. p. 602. *an DC.?* —Moist woods, Surinam, *Hostm.* n. 1009.

Arbor 30-pedalis, affinis B. crassifoliæ, sed folia minus coriacea et magis acuminata, pubes paginæ inferioris brevissima, ferruginea, adpressa, in foliis novellis nitens, demum derasa, et venatio diversa; venæ enim primariæ ut in B. *sericea* et B. *spicata* numerosæ, tenues, multo magis quam in B. *crassifolia* a costa divergunt. Species cæterum a B. *sericea* et B. *spicata* quibus habitu accedit, differt antheris ovario et pube. Racemus multiflorus, pedunculis brevibus plerisque bifloris. Bracteæ et bracteolæ parvæ acutæ. Petala sulfurea.

This species is evidently that described by Miquel (Linnæa, vol. 18. p. 602.) as the B. *lanceolata,* DC., or *Malpighia lanceolata,* Poir., but that plant is expressly stated by A. de Jussieu to be a var. of B. *crassifolia,* with hairy anthers. The n. 1009 of Hostmann here quoted, is referred by Miquel (Linnæa, vol. 18. p. 736.) to a narrow-leaved form of B. *crassifolia,* which may possibly have been transmitted under that number in some collections. Hochstetter mentions it merely as a new species of *Byrsonima.*

7. B. *spicata, Rich. A. Juss. Malp.* p. 40.—Sandy hills, British Guiana, *Schomb. 1st Col.* n. 469, *2nd Col.* n. 126 (57).

It is described by Schomburgk as a large tree. The flowers are yellow. The berries eaten by Curassows, pigeons, etc.

8. B. *propinqua,* sp. n., foliis breviter petiolatis ovali-oblongis acuminatis basi acutis glaberrimis v. novellis subtus pilis parvis conspersis, venis primariis crebris, calyce 10-glanduloso, antheris glabris connectivo ultra loculos vix producto, ovario apice piloso.—British Guiana, *Schomb. 2nd Col.* n. 743 (1335.)

Affinis varietatibus grandifoliis B. *spicatæ,* sed petiolus multo brevior et ovarium pilosum. Haud etiam absimilis specim. Martiano

(Herb. Fl. Bras. n. 651) B. *bumeliæfoliæ glabrifoliæ,* sed in hac etiam ovarium glaberrimum. Folia B. *propinquæ* nostræ 3–5-pollicaria. Venatio B. *spicatæ.* Inflorescentia etiam consimilis. Bracteæ minores.

* 9. B. *lævigata, DC.,—A. Juss. Malp.* p. 48. (Cayenne, *Richard.*)

This I have not seen, unless the two following species, which are evidently in many respects allied to it, should prove to be mere varieties.

10. B. *ceranthera,* sp. n., foliis obovato- v. oblongo-ellipticis vix acuminatis basi acutis glabris præter costam subtus pilosam, petiolis ramulisque novellis rufo-pilosis, calyce 10-glanduloso, antheris hirsutis, connectivo clavato ultra loculos producto, his in acumen longum desinentibus, ovario apice piloso.—On the Essequibo and Ripunoony, *Schomb. 1st Col.* n. 525.

Arbor 20-pedalis. Ramuli subteretes, novelli, petioli et stipulæ pilis rufis adpressis vestiti; rami adulti et etiam interdum petioli demum denudati. Stipulæ axillares, breves, latæ, extus villosæ. Folia pleraque semipedalia, 2–3 poll. lata, petiolo 4–6 lin. longo, apice acutata v. raro rotundata, nunc breviter acuminata, consistentia chartaceo-subcoriacea, adulta utrinque glabra, juniora subtus ad costam rufo-pilosa et novella pilis minutis pubescentia, siccitate rufescentia, supra nitidula, reticulato-venosa, venis majoribus inter primariis sat distantibus. Racemi 4-5-pollicares, rhachi bracteis pedicellisque ferrugineo-tomentellis. Bracteæ et bracteolæ brevissimæ, semiorbiculatæ. Flores majusculi. Calycis laciniæ latæ, obtusæ, rufo-pubescentes. Petala valde inæqualia, roseo-alba. Antheræ luteæ, pilis appressis tectæ, lineares, apice loculis in acumen a summo connectivo subbreviore liberum productis quasi bicornes. Ovarium superne pilosum, basi fere glabrum.

The structure of the anthers is that of B. *lævigata,* but the branches are neither compressed nor smooth as in that species, and the leaves are much larger and different in form. The B. *bicorniculata,* A. Juss., has also the two horned anthers, but they are glabrous and of a different shape. The berries of B. *ceranthera* are said to be eatable.

† B. *inundata*, sp. n., ramulis novellis ferrugineo-tomentosis mox glabratis, foliis ovatis oblongis sublanceolatisve obtusis basi cuneatis rotundatisve subcoriaceis glabris reticulato-venosis supra nitidulis, calyce 10-glanduloso, antheris pilosis, connectivo clavato loculos brevissime mucronato-acuminatos superante, ovario apice piloso.—On the Rio Negro, *Schomb.* 1*st Col.* n. 909.

Frutex ad ripas fluviorum et vulgo in locis inundatis crescens. Ramuli elongati, foliorum paribus distantibus. Stipulæ brevissimæ, latæ, acutæ. Petioli breves. Folia 3–5 poll. longa, 1–2 poll. lata, basi raro acuta; venæ primariæ irregulares, pagina inferior glaberrima sed squamulis minutis rufescens. Pedicelli subsessiles, solitarii v. gemini, 4–5 lin. longi, uti rhachis tomento minuto rufescentes. Bracteæ minutæ. Calycis laciniæ breves, latæ, pube appressa rufescentes. Petala valde inæqualia, pallide rosea. Antheræ luteæ.

This species is also near the B. *lævigata*, but the branches are not compressed, and the appendages of the anthers are reduced to minute points.

11. B. *densa*, *DC.*, *A. Juss. Malp.* p. 49.—Cayenne, *Martin*, (*Leprieur.*)

The leaves are rather smaller than in the St. Vincent's specimens thus determined in my herbarium by M. de Jussieu, more shining, and without any trace of hairs even in their young state, but the peculiar anthers, small petals, &c., are quite those of B. *densa*.

12. *B. concinna*, sp. n., tota glaberrima v. pilis in petiolis ramulisque perpaucis, foliis ovatis vix acuminatis basi acutis coriaceis utrinque nitidis, bracteis ovatis submembranaceis calyceque 10-glanduloso glaberrimis, antheris glabris, connectivo clavato ultra loculos producto, ovario glaberrimo.—British Guiana, *Schomb. 2nd Col.* n. 587 (912).

Hinc B. *densæ*, hinc B. *vacciniæfoliæ* similis. Folia quam in hac majora, minora tamen illis B. *densæ*, antheris ab utraque diversa. Folia pleraque 2–2½ pollicaria, 1–1½ poll. lata, utrinque viridia, reticulato-venosa, petiolo 2–3 lin. longo appresse villoso v. glabro. Stipulæ breves, latæ, obtusæ. Racemi 2–4-pollicares, densi v. basi interrupti. Pedicelli 2–4-ni, sessiles. Bracteæ læves, ovatæ obtusissimæ, inferiores 2–3 lin. longæ; bracteolæ similes sed minores. Calyx glaberrimus nec pili ulli in flore apparent nisi circa ovarium et in tubo stamineo. Antheræ oblongæ, recurvæ, connectivo breviter producto.

13. B. *bracteolaris*, sp. n., foliis ovatis obovatisve vix acuminatis basi acutis coriaceis nitidulis, bracteis ovatis, rhachi pedicellis calyceque 10-glanduloso rufo-villosis, antheris glabris, connectivo clavato loculos subduplo superante, ovario glaberrimo.—British Guiana, *Schomb.*, single specimen.

Species primo intuitu ab icone B. *nitidissimæ*, Kunth. haud absimilis, sed folia basi acuta et subtus glaberrima. Frutex videtur ramosissimus. Ramuli novelli rufo-villosi, mox tamen glabrati. Folia 2–3 poll. longa, 1½–2 poll. lata, obtusa v. brevissime et obtuse acuminata, venis primariis a costa valde divergentibus numerosis. Petioli 2–3 lin. longi. Stipulæ parvæ. Racemi 3–5 poll. longi, pedunculo, rhachi pedicellisque dense ferrugineo-villosis. Bracteæ persistentes 1–1½ lin. longæ, crassiusculæ, pubescentes, apice recurvæ, inferiores sæpe in foliolum petiolatum 2–3 lin. longum excrescentes. Bracteolæ consimiles sed minores. Pedicelli breves, recurvi, sessiles, solitarii v. gemini. Calycis laciniæ extus dense rufo-villosæ. Petala paullo majora iis B. *densæ*. Annulus stamineus dense rufo-villosus. Antheræ iis B. *densæ* subsimiles, loculi tamen ratione connectivi majores. Drupa fere globosa, glabra, 3 lin. diametro.

14. B. *Schomburgkiana*, sp. n., foliis obovali-oblongis breviter acuminatis basi acutis chartaceis glabris, petiolis brevibus rufo-villosis, bracteis lineari-lanceolatis, pedicellis calyceque 10-glanduloso villosulis, antheris hirtis connectivo clavato recurvo loculos superante, ovario glaberrimo.—Stony situations in woods skirting savannahs, British Guiana, *Schomb.* 1*st Col.* n. 60, partly, and n. 786; 2*nd Col.* n. 507 (777).

Arbor ramulis ultimis abbreviatis novellis dense rufo-villosis, ramis glabratis. Folia ad apices ramulorum conferta, 4–5 poll. longa, 1½–2½ poll. lata, apice rotundata et vulgo in acumen breve acutum producta, sat tenuia, glabra at non nitida, subtus dense obtecta squamellis minutis et siccitate canescentia v. pallide rufescentia. Petioli breves, pilis rufis subadpressis dense vestiti. Racemi laxi, majores semipedales. Pubes pedunculorum et calycium rufa, laxe subadpressa, facile detergibilis. Bracteæ 1½–2 lin. longæ, quam in omnibus affinibus angustiores, membranaceæ; bracteolæ consimiles sed breviores. Pedicelli sessiles, solitarii v. gemini. Calycis laciniæ latæ, suborbiculatæ. Petala majuscula, pallide rosea. Antheræ lineares, flavæ.

15. B. *sessilifolia,* sp. n., foliis sessilibus obovatis glabris, inflorescentia rufo-villosa, calycis 10-glandulosi laciniis extus glabris intus villosis, antheris apice hirtis, ovario glaberrimo.—British Guiana, *Schomb.* 1*st Col.* sent with B. *Schomburgkiana,* under n. 60.

Folia illis B. *Schomburgkianæ* latiora, obtusiora imo sæpe retusa, crassiora vix tamen coriacea, versus basin angustata et ibidem obtusa, in ramulo glabro arcte sessilia. Stipulæ brevissimæ, latæ. Racemus 3-pollicaris. Bracteæ ovatæ. Flores majusculi. Calyces ab omnibus quas vidi *Byrsonimis* differunt laciniis intus nec extus villosis; pili etiam pauci adsunt in tubo calycino inter glandulos exteriores. Antheræ in omnibus floribus ab insectis plus minus apice læsæ sed lineares videntur, connectivo clavato ultra loculos breviter (v. vix?) producto.

* 16. B. *gymnocalycina, A. Juss. Monogr.* p. 50. (Demerara, *Parker.*)

* 17. Coleostachys *genipæfolia, A. Juss. Monogr.* p. 60, t. v. (Cayenne, *Martin.*)

18. C. *vestita,* sp. n., ramulis novellis racemoque rufo-villosissimis, foliis ovali-oblongis ellipticisve crassis supra villosissimis subtus dense lanatis, racemo simplici, calyce 10-glanduloso, staminibus glabris.—Mountains of British Guiana, *Schomb.* 2*nd Col.* a single specimen.

Frutex 15–20-pedalis. Ramuli novelli pilis longis mollibus rufis dense vestiti, adulti denudati. Stipulæ circa 9 lin. longæ, cum petiolo et inter se usque ad medium v. ultra connatæ, ramulum vaginantes, parte libera ovata acuminata, membranaceæ, striatæ, pilis longis molliter villosæ. Petiolorum pars libera 2-3 lin. longa, dense villosa. Folia $1\frac{1}{2}$–3 poll. longa, 1–$1\frac{1}{2}$ poll. lata, apice obtusa v. breviter acutata, mucrone molli terminata, basi obtusa v. subcordata, crassa, mollia, supra pilis rigidulis dense velutino- v. subsericeo-villosissima, subtus lanugine intertexta albido-rufescente dense obtecta. Racemi 3–4-pollicares, floribundi, basi bracteis 2 stipulis summis brevioribus vaginati. Rhachis villis mollibus ferrugineis patentibus vestita. Bracteæ et bracteolæ parvæ, lanceolatæ, caducissimæ. Pedicelli solitarii v. gemini, sessiles, 4–5 lin. longi, ferrugineo-villosi. Calyx florens vix 2 lin. longus, 5-partitus, segmentis basi crassiusculis apice membranaceis villosissimis, glandulis parvis; fructifer valde auctus quasi 5-alatus; segmentis 6 lin. longis, basi profunde cordatis, ovatis acutiusculis v. subobtusis membranaceis reticulato-venosis rufescentibus pilis paucis sparsis hirtis. Petala 5, lutea, calyce florifero duplo longiora, parum inæqualia, glabra, lamina ovato-cordata margine crispula, leviter crenulata. Stamina 8 (an interdum 10?) glabra, libera; filamenta inferne dilatata. Antheræ filamento subduplo breviora, connectivo crassiusculo loculos excedente, his terminatis aristula rigida fusca. Annulus pilorum longus et densus inter stamina et ovarium. Ovarium glabrum, subglobosum, triloculare, loculo uno alterove interdum abortiente. Styli tres, filiformes, acuti. Fructus sphæroideo-subtriqueter, integer, indehiscens?, extus venis elevatis reticulato-rugosus, crustaceus, 1–3-locularis. Semina funiculo brevi appensa. Integumentum tenue. Cotyledones planæ, carnosæ, altera paullo majore basi margine in alterum recurvo. Radicula accumbens, ad apicem fructus spectans.

This differs from Jussieu's character of *Coleostachys*, by the ovarium being entirely undivided, but the other features, especially the calyx enlarged after flowering, and the habit are precisely those of *Coleostachys*.

19. C. *hypoleuca*, sp. n., foliis ovatis obtusis subcordatis coriaceis glabris subtus niveis, racemo composito, calyce basi vix glanduloso, staminibus pilosissimis.—British Guiana, *Schomb. 2nd Col.* n. 677 (1043.)

Ramuli et petioli juniores, stipulæ et inflorescentia villis rufis dense vestita, rami adulti glabrati. Stipulæ e geminis basi coalitis axillares, 6–8 lin. longæ. Folia 2½–4 poll. longa, 1–2½ poll. lata, obtusissima, majora basi plus minus cordato-truncata, minora basi rotundato-cuneata, omnia crassa, coriacea, marginata, nervis primariis tenuibus crebris reteque venularum utrinque conspicuis, supra glabra at non lucida, subtus ad costam mediam pilis paucis rufis onusta, cœterum glabra sed stratu quasi calcareo niveo obducta. Racemus terminalis, cum pedunculo 4½ poll. longus, basi stipulis 2 semipollicaribus connatis vaginatus. Umbellæ 4-floræ secus axin breviter pedunculatæ. Pedicelli 3–4 lin. longi, in umbella sessiles. Bracteæ breves, setaceæ. Calyx 5-fidus, per anthesin 2 lin. longus, extus rufo-villosus; laciniæ ovato-triangugulares inæquales, margine tenues, basi crassæ, glandulis parvis immersis sub villis fere occultis v. omnino evanidis; post anthesin calyx increscit sed fructifer haud suppetit. Petala breviter unguiculata, inæqualia, obovato-concava, margine eroso-denticulata, glabra v. dorso ad unguem breviter pilosa, majora 3 lin. longa. Receptaculum dense et longe rufo-pilosum. Filamenta vix basi brevissime connata, uti antheræ pilis densis longissimis hirsuta; connectivum crasso-clavatum, glabrum v. pilis raris hirtum, loculos breviter superans. Ovaria glaberrima, in uno flore alte connata vidi, in altero fere distincta, intus sub apice stylifera. Styli longiusculi, graciles, acutiusculi. Fructus haud suppetit.

This has not precisely the inflorescence of the two last, and the fruit is unknown, but the calyx appears to be that of *Coleostachys*, as well as the bracts and stipules.

† Lophanthera *Kunthiana, A. Juss., Malp.* p. 62.—On the Rio Negro, *Schomb.* 1*st Col.* n. 905.

20. Pterandra *latifolia, A. Juss., Malp.* p. 64.—British Guiana, *Schomb.*, a single specimen.

21. Spachea *elegans, A. Juss., Malp.* p. 72. (Demerara, *Rodsch.*) —Shady woods, Surinam, *Hostm.*, n. 57 and 1043. These specimens differ slightly from the figure in Delessert's Icones, by the leaves, which are oblong, or even obovate, and rounded at the extremity with a very short point, and not narrowed into a long point. In other respects they agree with Jussieu's character and figure, and some of Hostmann's specimens, numbered 57, are spe-

cially referred here by the monographist. Steudel, in the Flora, 1844, p. 756, refers Hostmann's n. 1043, to *Byrsonima densa*, but all the specimens I have seen belong, certainly, to the *Spachea*. Hostmann describes it as a tree with pink flowers.

22. Bunchosia (Malacmæa) *mollis*, sp. n., foliis ovatis breviter acuminatis subtus ramulisque molliter villosis, calyce 8-glanduloso, ovario 3-loculari glabro, stylis distinctis.—Pirarara, British Guiana, *Schomb.* 1*st Col.* n. 742.

Frutex 12–18-pedalis, ramis subscandentibus. Ramuli novelli dense villosi, adulti plus minus glabrati. Stipulæ minutæ intra villos petiolorum absconditæ. Petioli raro linea longiores, dense villosi. Folia 3–5 poll. longa, 1½–3 poll. lata v. suprema minora, ex ovato rhomboidea, pleraque breviter acuminata, infra medium angustata, imâ basi sæpius obtusa, molliter herbacea, novella utrinque dense villosa, adulta supra fere glabrata. Pili partium juniorum aurati. Racemi ad apices ramulorum axillarium diphyllorum solitarii, 2–4-pollicares, flavo-villosi. Bracteæ breves, villosæ. Pedunculi infra articulationem vix lineam longi, bibracteolati, bracteola una v. sæpius utraque glandulifera. Pedicelli circa 4 lin. longi. Flores magnitudine B. *nitidæ* v. paullo majores. Calycis glandulæ majusculæ, omnes distinctæ; laciniæ membranaceæ, extus pilosulæ. Stamina, receptaculum et ovarium glaberrima. Styli a basi distincti, apice truncati et subcapitato-stigmatiferi. Fructus non vidi, sed ovarium jam post anthesin auctum subglobosum est carnosum et læve.

23. B. *nitida*, *Rich.*—*A. Juss.*, *Malp.* p. 82. — Cayenne, *Martin.*

24. Lophopterys *splendens*, *A. Juss. Malp.* p. 100. — British Guiana, *Rich. Schomb.* n. 1536 (Guiana, *Herb. Delessert*).

Specimina florentia ad speciem a cl. Juss. adumbratam et in iconibus Lessertianis depictam pertinere videntur. Folia (pedalia), inflorescentia, calyces 4-glandulosi, et ovarium optime conveniunt. Petala fere 6 lin. longa, longiuscule unguiculata, oblique orbiculari-ovata, margine leviter denticulata. Filamenta crassa, glabra, apice attenuata. Antheræ glabræ, inappendiculatæ, connectivo

loculis breviore, his infra connectivum longiuscule productis, liberis. Styli apice truncato-subdilatati. Fructus ipse non vidi.

25. Brachypterys *borealis, A. Juss., Malp.* p. 102.—Cayenne, *Martin*; Surinam, *Hostm.* n. 287 (and 278?)

*26. Stigmaphyllon *hypoleucum, Miq. Linnæa,* 18, p. 51. (Surinam, *Focke.*)

*27. S. *sinuatum, A. Juss. Malp.* p. 107. (Cayenne, *Richard.*)

28. S. *latifolium,* sp. n., foliis ovato-suborbiculatis basi late cordatis breviter acuminatis obsolete angulatis et minute ciliolatis utrinque glabris v. vix ad venas puberulis, antheris glabris, stylis apice foliaceis, samaris puberulis a latere cristatis, ala oblonga divaricata basi antice appendiculata.—Surinam, *Hostm.* n. 146.

Affine *S. ciliato* et præsertim *S. Humboldtiano,* a priori imprimis foliis basi sinu valde aperto nec profunde cordatis, ab hac glabritie differt. Folia majora 3–4 poll. longa et lata, superiora minora et angustiora. Petioli apice biglandulosi. Rami floriferi compressi, apice bis terve dichotomi. Folia floralia raro pollicaria, basi acuta. Umbellæ sessiles v. terminales, multifloræ. Calyces uti tota inflorescentia puberuli. Cæterum flores et inflorescentia valde similes iis *S. Humboldtianæ,* cujus forsan erit forma glabrescens. Samaræ, in specimine nondum maturæ, jam ala 9 lin. longa donatæ.

29. *S. fulgens, A. Juss. Malp.* p. 116.—Cayenne, *Martin.*

Folia nonnulla obscure sinuato-lobata at non angulata, nec lobi mucronati uti de *S. sinuato* prædicatur. Cætera omnia cum *S. fulgenti* conveniunt.

*30. S. *Richardianum, A. Juss., Malp.* p. 118. (Cayenne, *Richard.*)

31. S. *purpureum,* sp. n., foliis late cordiformibus suborbiculatis obtusis mucronatis subtus pube brevi nitentibus, antheris glabris, stylis apice foliaceis, samaræ puberulæ lateribus tuberculatis v. obscure cristatis, ala oblonga basi introrsum appendiculata. —Pirarara, *Schomb.* 1*st Col.* n. 737.

S. *Martiano* et S. *Richardiano* affine, a priore differt foliorum forma, et samaris non cristatis; multo magis convenit cum descr. Jussiæana S. *Richardiani,* sed petioli longiores et petala (teste

Schomburgkio quod etiam in specim. siccis apparet) atropurpurea, ungue tantum leviter lutescente. Folia 2–3 poll. longa et lata, supra glabra v. ad costas puberula, non nitida, subtus pube nitente canescentia v. albida. Petioli superiorum ¾ poll., inferiorum 2–2½ poll. longi, puberuli, apice subtus biglandulosi, stipulis latis caducissimis. Rami floriferi 1–6 poll. longi, aphylli (foliis nempe floralibus ad bracteam biglandulosam reductis) apice bis ter quaterve 2–3-chotome ramosi; umbellis in axillis ramorum sessilibus et ramulos terminantibus 4–8-floris. Peduncli 1–1½ lin. longi, uti pedicelli duplo longiores, puberuli, ad articulationem bibracteolati. Petala 3 majora cucullato-concava, margine leviter crenulato-fimbriata. Antheræ glaberrimæ. Styli apice foliaceo-dilatati. Samaræ facie interiore concavæ, extus adpresse pubescentes, a latere nudæ v. obscure tuberculato-cristatæ, ala divaricata pollicari medio 5 lin. lata glabrescente, appendicula baseos lineam longa, 2 lin. lata, obtusa.

32. S. *convolvulifolium, A. Juss. Malp.* p. 120.—Surinam, *Hostm.* n. 146, 706, and 1029. (On the Essequebo, *Meyer.*)

33. S. *puberum, A. Juss. Malp.* p. 122.—Surinam, *Hostm.* n. 963 and 965. (Essequebo, *Meyer*; Cayenne, *Richard.*)

β. Schomburgkianum, foliis floralibus caulinis conformibus v. angustioribus plerisque bipollicaribus.—British Guiana, *Schomb. 2nd Col.* n. 819 (1500).

*34. S. *periplocæfolium, A. Juss. Malp.* p. 126. (Guiana.)

35. Banisteria *lucida, Rich. A. Juss. Malp.* p. 157.—Cayenne, *Martin.*

36. B. *lobulata, E. Mey. A. Juss. Malp.* p. 158.—Surinam, *Hostm.* n. 1027, also probably a very poor specimen from British Guiana, *Schom. 2nd Col.* n. 874. (1505)

*37. B. *divaricata, A. Juss. Malp.* p. 158. (Guiana, *Richard.*)

† B. *Schomburgkiana*, sp. n., ramulis sericeis, foliis ovatis oblongisve acuminatis basi acutiusculis membranaceis supra pubescentibus subtus argenteo-sericeis, paniculis axillaribus terminalibusque foliatis, pedunculis brevibus apice bibracteolatis, pedicello longiore calyceque eglanduloso argenteo-sericeis.—On the Rio Branco, *Schomb. 1st Col.* n. 844.

Frutex scandens, floribus roseis, in omnibus cum icone et descriptione Kunthii *Banisteriæ argenteæ*, A. Juss., (*Heteropteryde*, Kunth,) exacte convenit, nisi calycibus eglandulosis. An ejus varietas? Fructus ex ovario vix deflorato *Banisteriæ*. Petala, stamina (antheris 3 difformibus), ovaria et styli omnino *B. argenteæ*.

*38. B. *Martiniana*, *A. Juss. Malp.* p. 159. (Cayenne, *Mart.*)

39. B. *leptocarpa*, sp. n., foliis ovatis oblique acuminatis glabris v. supra pilis paucis inspersis coriaceis supra lucidis subtus concoloribus v. ferrugineis margine hinc inde glanduloso-denticulatis, paniculis axillaribus terminalibusque multifloris, calyce eglanduloso, antheris glabris connectivo majorum excrescente, stylis glabris, samaræ a latere binervatæ ala antice rectilinea basi longe angustata.—Cayenne, *Martin*; British Guiana, *Schomb.* 1*st Col.* single specimen; also probably a very bad specimen in the 2*nd Col.* n. 651. (999)

Rami juniores leviter compressi, brevi tomento ferruginei, adulti teretes glabrati, annulo nullo ad nodos. Folia 3–4 poll. longa, 2–2½ poll. lata, anguste v. late ovata, in acumen breve desinentia basi obtusa v. levissime subcordata, margine denticulis minutis remotis notata, quorum alii acuti alii glanduliformes, supra pilis paucis medifixis interdum conspersa et subtus ad venas tomento raro ferrugineo pubentia, cæterum glabra nec subtus albicantia. Paniculæ oblongæ multifloræ, semel, bis, terve racemosim ramosæ, umbellis ramulos terminantibus 4-floris, lateralibus sæpe 2–3-floris. Pedicelli glabelli, graciles, 5–6 lin. longi, in umbellis sessiles, basi bracteolis parvis suffulti. Calyces fere glabri laciniis ovatis per anthesin vix linea longioribus. Petala glabra calyce triplo longiora. Stamina glabra, valde inæqualia; trium antheræ multo majores connectivo valde excrescente. Ovaria villosissima. Styli graciles, apice capitato-stigmatiferi. Samaræ sericeo-villosæ, venis utrinque 2 parum prominentibus notatæ; ala demum 10–11 lin. longa, erecta, anguste oblonga, obtusiuscula, supra medium 3 lin. lata, basi valde angustata.

In many respects this comes near to Jussieu's description of *B. Martiniana*, but he does not mention the curious teeth of the leaves like those of some *Stigmaphylla*; the leaves are not white

underneath, as is said of *B. Martiniana,* and there also appear to be some differences in the fruit.

*40. B. *calocarpa, Miq. Linnæa,* vol. 18. p. 53. (Surinam, *Focke.*)

41. B.? sp. n. British Guiana, *Schomb. 2nd Col.* n. 1001 (1739).

Of this I have only two very young panicles without any leaves, except the floral ones, which are covered on both sides with soft, silvery hairs. It appears to be different from any described *Malpighiacea,* but the specimens are too young to determine whether it belongs to *Banisteria, Heteropterys,* or *Tetrapterys.*

42. Heteropterys *cristata,* sp. n., foliis ovatis v. ovali-oblongis acuminatis basi obtusis coriaceis lucidis utrinque glabris v. novellis subtus adpresse villosis, panicula terminali laxa, pedunculis infra apicem minute bibracteolatis, calyce 8-glanduloso, samaris, transverse cristato-appendiculatis.—British Guiana, *Schomb. 1st Col.* n. 279.

Frutex alte scandens. Rami glabriusculi lenticellis tuberculati. Stipulæ in specimine haud obviæ. Folia 4–5 poll. longa, 1½-3 poll. lata, reticulato-venosa, petiolo 3–4 lin. longo. Panicula terminalis, pube rufa tomentosa; rami racemosim oppositi, inferiores compositi, cæteri umbellas seu potius racemos in umbellas fere contractos ferunt tres, quorum terminalis subsessilis, laterales pedunculati. Folia floralia, sub ramis parva, ovato-lanceolata, petiolata. Bracteæ parvæ. Pedunculi infra articulationem 3–4 lin. longi, infra apicem bibracteolati, bracteolis minutis appressis. Pedicelli pedunculis subæquilongi. Calycis laciniæ rufo-pubescentes, a glandulis fere omnino tectæ. Petala glabra, rosea, ungue calyce dimidio longiore; lamina subintegra, carinato-concava, ungue brevior. Stamina glabra; antheræ oblongæ, connectivo tenui. Ovaria villosa. Styli crassiusculi, apice truncati intus stigmatosi. Samaræ subglabræ, striato-nervosæ, cristis lateralibus irregulariter lobatis 1–2 lin. latis; ala fere pollicaris, falcato-oblonga, margine exteriore ultra medium rectilinea incrassata, interiore curvilinea.

43. H.? *cinerascens,* sp. n., foliis elliptico-oblongis breviter et obtuse acuminatis basi acutiusculis eglandulosis supra glabris lucidis subtus cinereo-pubentibus, paniculis axillaribus brevibus

racemiformibus, pedicellis subsessilibus confertis, calyce 8-glanduloso, ovario hirsuto.–British Guiana, *Schomb. 2nd Col.* n. 488 (773).

Scandens videtur, ramis novellis cinereo-pubescentibus, adultis glabratis. Stipulas non vidi. Petioli 2–3 lin. longi, cinereo-villosi. Folia 2–4 poll. longa, 1–1¼ poll. lata, sæpe basi complicata, margine subrecurva, vix coriacea sed supra nitida rete venarum leviter prominula, subtus pilis adpressis molliter cinereo-pubescentia, costa media venisque primariis paucis prominentibus, harum inferiores fere a basi folii ortæ. Paniculæ 1–2-pollicares, rhachi subsericeo-pubescente, pedicellis parce pilosis. Rami breves, oppositi. Umbellæ (seu potius racemuli umbelliformes) ad apices ramorum et paniculæ ipsæ plurifloræ. Bracteæ sub ramis paniculæ 1–2 lin. longæ, lineari-lanceolatæ, sub pedunculis brevissimis minutæ, cum bracteolis similibus confertæ. Pedicelli 3 lin. longi. Calyx parce villosus, laciniis obtusis. Petala obovali-orbiculata, carinato-concava, subintegra, glabra. Stamina glabra. Antheræ oblongæ, connectivo crassiusculo loculis breviore. Ovarium dense hirsutum. Styli crassiusculi, apice truncati. Fructus haud suppetit, sed ovarium vix defloratum jam in alam dorsalem excrescere incipit, et stylus *Heteropterydis* nec *Banisteriæ*.

44. H. *macrostachya, A. Juss. Malp.* p. 178.—Small islands of the Essequebo, *Schomb.* 1*st Col.* n. 222; Surinam, *Hostm.* n. 897.

*45. H. *biglandulosa, A. Juss. Malp.* p. 200 (Guiana).

46. H. *platyptera, DC. A. Juss. Malp.* p. 201.—British Guiana, *Schomb. 2nd Col.* n. 103, (82) and 1517 of *Rich. Schomb.* Surinam, *Hostm.* n. 531, 895, and 1030.

47. H. *Lessertiana, A. Juss. Malp.* p. 208.—Pirarara, *Schomb.* 1*st Col.* n. 729, and, judging from a very bad specimen, 2*nd Col.* n. 726 (1099); Surinam, *Hostm.* n. 127, 224 (mixed with H. *Candolleana*) and 1107 (mixed with H. *Candolleana* and *Hiræa chrysophylla*).

48. H. *Candolleana, A. Juss. Malp.* p. 209; H. *eglandulosa, Miq. Linnæa,* vol. 18. p. 54? excl. syn.—Savannahs of the Upper Rupunoony, *Schomb.* 1*st Col.*, several single specimens, also 2*nd Col.* n. 295 (500); Cayenne, *Martin*; Surinam, *Hostm.* n. 224,

(partly) and n. 1107 (partly). The leaves vary from ovate to oblong or lanceolate, acuminate at the end, blunt at the base.

49. H. *carinata*, sp. n., foliis ovato-lanceolatis oblongisve novellis laxe villosis adultis glaberrimis lucidis reticulatis subcoriaceis eglandulosis, pedicellis apice minute bibracteolatis, calyce 8-glanduloso, petalis carinato-alatis.—British Guiana, *Schomb. 2nd Col.* n. 632 (958).

Folium forma et magnitudo necnon inflorescentia omnino cum descr. H. *Martianæ* Juss. conveniunt, sed folia adulta glaberrima concoloria, et glandulæ desunt. Pubes inflorescentiæ et foliorum novellorum laxa, mollis, rufa. Flores H. *Martianæ* petalis, dorso late alatis. Fructus deest.

50 Tetrapterys *mucronata, Cav.*—*A. Juss. Malp.* p. 267.—Cayenne, *Martin, Leprieur.*

*51. T. *crispa, A. Juss. Malp.* p. 268 (Cayenne, *Richard, Leprieur.*)

52. T.? *includens*, sp. n., foliis ovatis apice rotundatis et breve acuminatis glabris coriaceis lucidis subtus basi biglandulosis, racemis subpaniculatis, umbellis 4-floris, pedunculis apice bibracteolis bracteolis magnis concavis alabastrum subsessilem involventibus, calyce 8-glanduloso, petalis magnis fimbriatis.—Cayenne, *Martin.*

Ramuli verruculosi, lineis elevatis ab insertione foliorum decurrentibus tetragoni, novelli uti inflorescentia tomento minuto rubentes. Stipulas non vidi, sed linea adest transversalis interpetiolaris verosimiliter a cicatrice stipularum caducarum relicta. Petioli $\frac{1}{2}$–1-pollicares. Folia 5–6 poll. longa, 3$\frac{1}{2}$–4 poll. lata, venis primariis subdistantibus reteque venularum subtus prominulis, utrinque in specimine glabra, at novella non vidi; glandula sessilis in ima basi paginæ inferioris ad utrumque latus costæ mediæ; acumen apicis 2–6 lin. longum. Racemi in axillis foliorum superiorum 4–6 poll. longi, quorum superiores paniculam efformare videntur. Folia floralia sub ramulis racemi reducta ad bracteam petiolatam lanceolatam biglandulosam. Rami breves, medio bibracteati, umbella quadriflora terminati. Pedunculi bractea ovata concava subtenui, 3–4 lin. longi. Bracteolæ 3–4 lin. longæ, late obovatæ v. orbiculatæ, concavæ, altera alteram æstivatione obtegente, utraque alabastrum ante anthesin includente, per anthesin persistentes patentes. Pedicelli brevissimi v. vix ulli. Flores ampli. Calyx 5-fidus, rufo-pubescens, glandulis 1½ lin. longis lacinias fere obtegentibus. Petala inæqualia, majora 5 lin. longa, lata, concava, margine fimbriata. Stamina glabra; filamenta crassa, basi coalita; antheræ ovatæ, quarum aliæ (5? v. 7?) minores, connectivo crasso glanduliformi loculos tamen haud superante, aliæ (5? v. 3?) majores, connectivo magno loculos parvos duplo fere superante. Ovaria pubescentia fere distincta, singula dorso cristis 5 longitudinaliter aucta, quarum 2 (inter marginales et dorsalem mediæ,) minus prominulæ nec ad apicem ovarii attingunt. Styli erecti, inferne valde incrassati, apice truncati. Fructus deest.

Notwithstanding the appearance of the ovary, I have much hesitation in placing this fine species in *Tetrapterys* without having seen the fruit; as the inflorescence and stamens present several peculiarities, which I have not observed in any other species of the genus.

53. T. *discolor, DC. A. Juss. Malp.* p. 271.—On the Essequebo, *Schomb.* 1*st Col.* n. 197. A twiner, agreeing well with the descriptions, except that the difference of colour in the two surfaces of the leaf is not so striking as it is probably in the original specimens.

54. T. *Surinamensis, Miq. Linn.* vol. 18. p. 55.—Surinam, *Hostm.* n. 983.

55. T. sp. n.? T. *glaberrimæ* simillima, sed calyx 4-glandulosus et ovarium hirsutum stylis crassiusculis truncatis. Appendices ovarii omnino *Tetrapterydis.*—Surinam, *Hostm.* n. 1142, the specimen is a mere fragment insufficient for accurate determination.

56. T. *puberula, Miq. A. Juss. Malp.* p. 271 (Surinam, *Focke*). I should also refer to this species a very imperfect specimen in *Martin's* Cayenne collection.

57. T. *calophylla, A. Juss. Malp.* p. 271.—Cayenne, *Martin*; Surinam, *Hostm.* n. 948.

*58. T. *acutifolia, Cav. A. Juss. Malp.* p. 280. *Miq. Linnæa.* vol. 18. p. 56.—Cayenne, *Aublet*, &c., Surinam, *Focke.*

59. T. *glaberrima*, sp. n., foliis ovatis ellipticisve breviter acuminatis basi obtusis coriaceis glaberrimis nitidis, paniculis

axillaribus folio brevioribus glabris, bracteis parvis acutis, calyce 8-glanduloso, samaræ glaberrimæ alis oblongis superioribus paullo longioribus.—British Guiana, *Rich. Schomb.* n. 1765; Cayenne, *Martin.*

Specimina pube omnino destituta. Stipulæ interpetiolares lanceolatæ, caducissimæ, cicatrice transversali parum conspicua. Petioli crassi, 2–3 lin. longi, supra canaliculati v. versus laminam marginati. Folia 5–6 poll. longa, 2–3 poll. lata, crebre reticulato-venosa, venis primariis prominulis sed tenuibus. Inflorescentiæ axillares complures v. a basi ramosæ, bipollicares: umbellæ 4-floræ, pedunculatæ, racemosim oppositæ v. terminales. Bracteæ sub ramis vix 2 lin. longæ, lanceolatæ, acutæ, sub radiis umbellæ minutæ. Pedunculi nunc brevissimi v. subnulli, nunc lineam longi, apice minute bibracteolati. Pedicelli 4–6 lin. longi, tenues. Calyx glaber, laciniis erectis ovatis, glandulis lineam longis valde prominentibus. Petala subintegra, magnitudine T. *mucronatæ.* Antheræ oblongæ, recurvæ, connectivo crassiusculo. Ovaria glabra. Styli tenues apice leviter dilatati, truncato-stigmatiferi. Fructus alæ majores circa 7 lin. longæ, 2 lin. latæ; crista dorsalis parva, alulis parvis inter cristam et alas.

60. T. *fimbripetala, A. Juss. Malp.* p. 290.—Surinam, *Hostm.* n. 1227 and 1252.

61. Hiræa (v. Tetrapterys sect. Pentapterys?) *gracilis,* sp. n., foliis breviter petiolatis ovatis oblongisve acuminatis adultis glabratis, racemis axillaribus ramealibusve elongatis simplicibus, pedunculis apice bibracteolatis pedicello æquilongis, calyce 8-glanduloso, ovario villoso, appendiculis marginalibus bipartitis, dorsali cristæformi.—British Guiana, *Schomb. 2nd Col.* n. 737 (1119).

Ramuli tenues, elongati, novelli pubescentes, mox glabrati. Stipulæ parvæ, villosæ, petioli adnatæ. Petioli 1–1½ lin. longi, glabri. Folia 2–3 poll. longa, pollicem circiter lata, apice in acumen acutiusculum angustata, basi obtusa, eglandulosa, rigidule chartacea, reticulato-venosa, novella utrinque præsertim in pagina inferiore pilis adpressis medifixis villosa, mox glabrata. Racemi v. in ramis annotinis ad axillas foliorum superiorum, vel sæpius in ramis hornotinis infra folia orti, solitarii, 1½–3-pollicares, fere a basi floriferi, ima basi squamis paucis sterilibus stipati. Pili in rhachide pedunculis bracteisque pauci adpressi. Pedunculi oppositi 2–2½ lin. longi, uniflori, pedicello pedunculo æquilongo. Bracteæ subtendentes lineari-lanceolatæ, acutæ, 2–3 lin. longæ; bracteolæ ad apicem pedunculi paullo breviores et obtusiores. Calyx 1½ lin. longus, laciniis erectis adpresse villosis, quarum 4 basi biglandulosæ. Petala fere 4 lin. longa, ovalia, leviter eroso-crenulata, fere plana, dorso parce pilosa. Stamina glabra, parum inæqualia. Antheræ oblongæ, connectivo loculis breviore. Ovaria villosa, intus connata. Styli apice leviter subrecurvo-dilatati, extus acuti, intus truncato-stigmatiferi. Fructus non vidi, sed ovarium jam paullo accretum fert cristam dorsalem et alas marginales usque ad basin bipartitas.

Without the perfect fruit it is impossible to say whether this is a *Hiræa* allied to *H. ambigua* and *argentea*, or a *Tetrapterys* of the section *Pentapterys*, which, as observed by A. de Jussieu, is closely allied to those species. The inflorescence is certainly that of *H. ambigua* and *argentea*, but the lateral wings of the very young fruit appear to be as distinctly divided, as in *Tetrapterys*.

62. Hiræa *sepium*, *A. Juss. Malp.* p. 297.—Cayenne, *communicated by Prof. De Candolle.* The fruit is precisely that of my Brazilian specimens, the leaves intermediate between those of Salzmann's specimens, mentioned by A. de Jussieu, and those of the more common Brazilian form figured in St. Hilaire's Flora.

*63. H. *anisopetala*, *A. Juss. Malp.* p. 300; *Miq. Linnæa*, vol. 18. p. 57. (Surinam, *Focke.*)

64. H. *Simsiana*, *A. Juss. Malp.* p. 306. (Cayenne, *Aublet,*) My specimens are only from St. Vincents.

65. H. *oleæfolia*, sp. n., foliis subsessilibus oblongo-lanceolatis, acutiusculis basi acutis coriaceis supra demum glabratis subtus aureo- v. albido-pubescentibus, racemis ramealibus paucifloris, pedunculis infra apicem bibracteolatis, calyce 8-glanduloso, petalis glabris.—British Guiana, *Schomb. 2nd Col.* n. 650 (998).

Ramuli cinerei, ad nodos incrassati. Stipulas haud vidi. Petioli brevissimi, crassi. Folia 2–3 poll. longa, 5–9 lin. lata, eglandulosa, margine revoluta, novella supra pubescentia, mox glabrata et demum fere lucida, subtus pube adpressa subsericea obducta, costa media prominente, venis vix conspicuis. Inflorescentiæ pube brevi aureæ, in ramulis annotinis infra folia oppositæ, 4–6-floræ. Rhachis communis brevis; pedunculi semipollicares, medio bibracteolati, bracteolis ovatis 1 lin. longis; pedicelli pedunculo longiores, apice incrassati. Calyces fere 2 lin. longi, laciniis erectis crassiusculis, glandulis parvis. Petala calyce plus duplo longiora, margine lacero-fimbriata. Stamina glabra, basi connata; antheræ ovatæ, connectivo crassiusculo, plerisque loculo breviore, in nonnullis tamen (3?) connectivum loculos breviter superat. Ovaria villosissima, dorso tricostata. Styli crassiusculi, apice truncati. Fructus haud vidi.

66. H. *Blanchetiana, Moric. A. Juss. Malp.* p. 313.—Surinam, *Hostm.* n. 493.

67. H. *fagifolia, A. de Juss. Malp.* p. 313.—Surinam, *Hostm.* n. 494. (frequens in Guiana, *A. Juss.*)

68. H. *Riedleyana, A. Juss. Malp.* p. 315.—Surinam, *Hostm.* n. 291 and 993.

69. H. *fulgens*, var. *Demerarana, A. Juss. Malp.* p. 318.—British Guiana, *Schomb.* 1*st Col.* a single specimen. This variety is most probably, as suspected by Jussieu, a distinct species, but my specimen is not, any more than the one he saw, sufficient to determine the question.

70. H. sp. n.?—British Guiana, *Schomb.* 2*nd Col.* n. 207 (123). This very imperfect specimen has the leaves of the last, but the calyx bears eight glands, as in the following H. *chrysophylla*, from which it differs in foliage.

71. H. *chrysophylla, A. Juss. Malp.* p. 318.—British Guiana, *Schomb.* 1*st Col.* n. 144; Surinam, *Hostm.* n. 1107 (one specimen amongst several of *Heteropterys, Lessertiana*, and *Candolleana*).

72. H. *multiradiata, A. Juss. Malp.* p. 321.—Cayenne, *Martin.*

*73. Diplopterys *paralias, A. Juss. Malp.* p. 324.—Cayenne, *Richard.*

*74. Jubelina *riparia, A. de Juss. Malp.* p. 326.—Cayenne, *Leprieur.*

(*To be continued.*)

Notes and Observations on the Botany, Weather, &c., of the United States of America, made during a tour in that country, in 1846 *and* 1847. *By* Wm. Arnold Broomfield, M.D., F.L.S., &c.

An indifferent state of health rendering a change of scene, climate, and occupation absolutely necessary, I determined towards the middle of 1846, on visiting the United States of America; a country I had long wished to see; as well on account of the great moral and political experiments of which it is the theatre, as of the analogy its vegetation bears to that of Europe, our own island of Great Britain included.

It is not without hesitation that I have condensed and thrown together for the public eye, the desultory notes and observations of a twelvemonth's travel, over a soil, where the harvest to be gathered seems to reproach the reaper with indolence or negligence by the small amount of fruits he has brought into the garner. The list of genera, and still more of species, noted on the way, will, I apprehend, seem very meagre, and requires explanation before proceeding further. It must be borne in mind that I did not visit America purely for botanical purposes: the primary object was renovation of health, and all exertion, mental and bodily, incompatible with the attainment of that desirable end, I was compelled to renounce, often under the strongest temptations (not always successfully combated), to yield up the dictates of prudence to the fascinating interest of the moment.

To the task of making a large and indiscriminate collection was opposed another consideration, no less weighty than the foregoing. Experience had, on former occasions, taught me that the arduous and mechanical occupation of a plant-collector was a great consumer of that time, which, in traversing thinly-peopled or still untrodden regions, may be properly and advantageously spent in accumulating *novelties* for after-examination and the benefit of science. But the traveller, passing through densely-peopled countries, besides that he can hope to add little that is *new* to the common stock of scientific gatherings, finds his attention legitimately claimed by other objects than those of Nature alone; and without being a whit the less inclined to pay her especial homage, he is sensible of what is due to other branches of information, of which he would be ashamed to return home altogether ignorant. Had health or leisure permitted of my collecting all, or most of the species, within my reach, I must still have omitted mentioning numbers with which I was either in part or wholly unacquainted, preferring to pass over such in silence, to giving erroneous names to some, and subjoining a mark of doubt to others. The books I had at hand on the journey were necessarily few, and the determination of the species on the spot, in most cases, impracticable. It was only when enjoying the advantage of an American botanical friend for a companion, on my herborizing excursions, that I could confidently trust myself to record, by name, the many new or doubtfully recognised acquaintances that presented themselves to my notice at every step.

Seeing, therefore, the impossibility of giving undivided attention to the botany of the United States, without sacrificing other matters of general interest, I resolved to confine my observations principally to the range of the species, and more particularly of the trees and shrubs; interspersing occasional remarks on their size, place, and growth, uses, and so forth, together with others on the *Flora hospita* of these countries, the plants cultivated or introduced, for ornament or utility, into gardens or pleasure-grounds.

Leaving Liverpool very late on the evening of the 7th of July, in the noble but adverse-fated steam-ship Great Britain, we reached New York at a very early hour on the morning of the 21st, notwithstanding that our progress was twice suspended by the giving-way of one of the driving-chains of the screw propeller, obliging us to lie-to for some few hours each time to rivet on new links; besides having been forced to stop, occasionally, for a shorter time, to tighten the chains, which were found to become slack under the great and constant strain to which they were subjected. This detention, probably, saved us from a disastrous termination to our voyage; for shortly after mid-day of the 16th, upon the sudden clearing away of a thick fog, which had precluded any observations being taken for the ship's place during the two previous days, we found ourselves in a deep bay or bight of the southernmost coast of Newfoundland, near Cape Royal, some distance to the westward of Cape Race, completely land-locked, and running directly on the line of two awkward-looking rocks not much more than a cable's length a-head of us when first discovered. Happily the wind was light and a-head, with very little sea: the engines were reversed, and the jib set in a trice, when the ship's head payed off just in time to avoid striking on the upper part of the reef; but her bottom slightly grazed the submerged part, when she was afloat again in sixty fathoms. A multitude of fishing vessels, of all sizes, were at hand to have afforded us assistance if needed, it being then the height of the fishing season; but the iron-bound coast, encumbered even at this late period of the year with masses of ice piled upon the beach, and the wild, rugged, and mountainous country beyond, sprinkled with small stunted pines, awakened no very agreeable thoughts of what might have been our fate had we but arrived there a little sooner than we did, whilst the fog was still thickly shrouding the perils we had so providentially escaped. The scenery, however, was not without much of picturesque beauty: its stern features were softened by the verdure which clothed the slopes of the hills and the immediate valleys, that, shutting in the horizon nearly all round, gave to the deep bay, into which we had so unaccountably penetrated, the character of an alpine lake. The temperature of the air was 61°, of the water 47°, a difference quite sufficient to account for the dense fog which had the moment before prevailed. Our troubles and adversities were soon forgotten in the contemplation of the noble panorama, and the acquisition to the dinner-table of certain splendid fresh cod, which from charitable or mercenary motives, (let us hope the former), were pitched on board from a fishing schooner as we slowly steered past her, on our way out by the same channel we had entered.

The weather, for the first two days after my arrival at New York, was as dark and misty as it could possibly have been at this or any other season in our own much calumniated climate, but subsequently cleared up and continued generally fine during the remainder of my first sojourn in this wonderful city.

Most of the streets in New York are planted with single rows of trees, a practice universal in American cities of recent date, and very conducive to health and coolness during the warm summers of the country. Here, (as in most of the States to the southward, as far as the Gulf of Mexico,) the favourite trees are the Chinese Sumach or Tree of Heaven (*Ailanthus glandulosa*), and the Paper Mulberry (*Broussonetia papyrifera*), both of which attain large dimensions, but are objectionable from the abundant suckers sent up from the roots, which insinuate themselves beneath and loosen the pavement, as well as encroach to a troublesome extent upon the areas of the houses. The fetid smell of the leaves and flowers of the former is another objection to its use in the thoroughfares of a populous city. The Catalpa (*C. cordifolia*) is likewise frequent, and appears to resist the winters here as well as at Philadelphia, but does not reach quite such ample dimensions as to the southward of Pennsylvania. At Brooklyn, a large and flourishing offset of New York, on the opposite shores of Long Island, and where many of the principal merchants of the city have sumptuous residences, I remarked Catalpas of very large growth, much exceeding in girth any individuals I know of in England: many were profusely laden with their half-ripe pods, like capsules, nearly a foot in length. In the public squares and gardens of New York, the Weeping Willow (*Salix Babylonica*) attains a magnificent height and bulk; whilst the noble bushes of Althæa Frutex (*Hibiscus Syriacus*), with single and double flowers of great size and variety of colour, ornament the fronts and areas of the houses. If Syria be, as is alleged, the true native country of this shrub, it must surely inhabit its lofty mountain ranges; its power of resisting cold being such, that it endures even the winters of Boston without protection. I suspect that both this and the Weeping Willow are of more eastern origin; and that their migration westward will be ultimately traced from the colder elevated regions of central Asia, and perhaps the northern provinces of China, the trees and shrubs of which latter country adapt themselves with facility to the less extreme climate of the United States. The Locust (*Robinia Pseudo-acacia*), so common and esteemed in English gardens, is pretty much discarded here and in many other parts of the Union, as a "shade tree," from constant liability to having its top destroyed by a wood-boring insect, against the ravages of which no certain and effectual preventive has yet been discovered.* The Honey, or Sweet Locust (*Gleditschia triacantha*), thrives vigorously, and splendid specimens may be remarked on the Bowling-green. The remaining trees, commonly seen in the public walks, as the Park, Battery, &c., are chiefly American and European Poplars, especially the Abele (*Populus alba*), which thrives even in the sandy soil and sultry atmosphere of Charleston, S. C., the Occidental Plane (*Platanus occidentalis*), and the Elm (*Ulmus Americana*). It is singular that in this, its native climate, the Occidental Plane is subject to a sudden and unaccountable decay, similar to what destroyed great numbers of the same tree in England many years since, and which, I believe, still occasionally affects its congeners, *P. orientalis*, and *P. acerifolia*, after arriving with us at a certain age and stature. In both countries, the species seems alike apt to be injured by the late frosts of spring. At that season, in 1842, 1843, 1844, the Planes throughout the New England States suffered severely from this cause, the larger trees particularly; and for several weeks many of them seemed to have been killed entirely. Some, indeed, were destroyed: the rest recovered more or less completely, but with the loss, in nearly all, of the extremities of the branches.†

The vacant lots and waste places in and around New York are covered with *Datura Stramonium*, and its purple variety *D. Tatula* (these pass insensibly into each other), *Xanthium strumarium* and *X. spinosum* (all these are introduced), *Ambrosia trifida* and *A. elatior?*,

---

* For an account of these wood-boring and other enemies of the Locust Tree, *vide* A Treatise on some of the Insects of New England which are injurious to vegetation, by T. W. Harris, M.D. Boston, 1842. 8vo.

† See 'A Report on the Trees and Shrubs of Massachusetts,' published by order of the State Legislature. Boston, 1846. 8vo.:—a work, though anonymous, full of curious and original information on the subject treated.

Lepidium Virginicum, Oxalis striata, Amaranthus albus and *A. spinosus, Eleusine Indica, Digitaria sanguinalis, Oplismenus Crus Galli, Setaria viridis, S. glauca, Paspalum setaceum ?, Abutilon avicennæ, Portulacca oleracea,* and *Phytolaca decandra.* Most of them are thought to be introduced intruders, as are certainly a host of common English weeds of cultivated ground, which have now obtained footing in most parts of the Union, and seem to be as much at home as in their native soil: such are, *Trifolium repens, Linaria vulgaris, Stellaria media, Carduus arvensis* (Canada Thistle), and *C. lanceolatus, Chenopodium album, Arctium Lappa, Capsella bursa-pastoris,* with many others.

During this my first stay at New York, I made several excursions into the neighbourhood, especially to Hoboken (a village on the New Jersey shore), and along the banks of the noble Hudson or North River, which on that side towards Weehawken presents a succession of bold, rocky, and finely wooded heights. On one of these occasions I was accompanied by — Brown Esq., Secretary to the Lyceum of Natural History of New York, an excellent local botanist, who kindly pointed out to me the rarer species of this rich locality. The soil at Hoboken is sandy, as is that of a great part of the state of New Jersey. Betwixt the shore and village, and a line of low wooded hills, are brackish, marshy flats, densely covered with a variety of paludal plants, especially *Cyperaceæ* and Grasses. In these marshes, amongst numberless other things, I remarked *Iva frutescens, Erechtites* (*Senecio*) *hieraciifolia, Eupatorium purpureum, Verbena hastata* and *urticæfolia,* (the tall stems of the former, with dense panicles of blue flowers, rose conspicuously above the surrounding swamp), *Veronica præalta, Impatiens fulva,* and *I. pallida, Penthorum sedoides, Elodæa Virginica, Rosa Carolinæ,* (the deep blush of whose blossoms ornaments the low grounds in most parts of the country), *Panicum hispidum, Carex tentaculata,* with other undetermined species, *Leersia oryzoides, Mimulus alatus, Lilium superbnm, Hibiscus palustris* or *Moscheutus? Ludwigia macrocarpa,* (from its singular cubic capsule called Seed-box) *Isnardia palustris, Myrica cerifera, Cassia Marilandica, Sambucus nigra* (var.? *Canadensis*) *Polygonum sagittatum* and *P. arifolium* (both called here Tear-thumb, on account of the lacerating prickles with which they are armed), *P. scandens,* (this seems to differ little, if at all, from the *P. dumetorum* of Europe), *Tricophorum cyperininum? Œnothera biennis? Lastræa Thelypteris, Onoclea sensibilis, Osmunda cinnamomea, Lycopus Virginea, Lemna polyrhiza, Bœhmeria cylindrica*; whilst in the drier spots on the borders of the marshes grew *Polygala verticillata, Hypericum quinquenervium, Lobelia puberula, Hypoxis erecta, Asclepias amæna?,* with numerous other plants since found to be common elsewhere, but at that time imperfectly known to me. On dry ground near the village, I gathered *Cenchrus tribuloides?, Euphorbia depressa, Mollugo verticillata, Polygonum erectum* (probably only an American variety of *P. aviculare,* analogous to our broad-leaved prostrate forms near the sea), an *Amaranthus, Solanum nigrum* var.? *Virginicum,* (though I know not wherein it differs from the normal European plant), *Eragrostis vulgaris,* (*Poa Erag.*) with some others.

Of the ligneous vegetation of the flat alluvial tract on which Hoboken stands, the only tree deserving notice in this place, as not occurring on the higher grounds, is the Sweet Gum (*Liquidambar styraciflua*) which grew in some abundance on the edge of the swamps; and though in this latitude (40° 42′) close upon their polar limitrophe parallel,* the trees were well-grown and healthy, but inferior in bulk, as much probably owing to soil as climate, to that which the species attains to the southward and westward. It is to be regretted that this stately tree, with its ample aromatic foliage and depth of shade, is not oftener seen in England.

---

* Michaux, in his North American Sylva, asserts that the Sweet Gum terminates towards the north east in lat. 43½ between Portsmouth and Boston; but no recent botanist appears to have found it within the New England States. I am told that a few specimens occur near Troy, New York, in lat. 42½, whether indigenous there or planted, is doubtful. Michaux is often incorrect in his geographical position of places; thus the latitude of Portsmouth is only 43° 4′ and that of Boston 42 21′: hence any station between these two cities, must be considerably to the southward of the limitrophe parallel he assigns to the tree in question. With the Oaks I was at that time very imperfectly acquainted, but have since devoted considerable attention to the examination and collecting the American species of which I shall have occasion to speak more particularly in the sequel.

Its exclusive natural attachment to deep alluvial soils may, perhaps, disqualify it for universal cultivation in our parks and pleasure-grounds, where, however, appropriate situations might generally be found for the display of its perfections. The rapidity of its growth would compensate for its inutility as timber; in which last respect it would be only on a par with some of the most cherished ornaments of our plantations, as the Horse-chestnut, Lime, and Plane. In low rich ground, by the side of artificial water, no tree would be more desirable than this.

Immediately to the westward of the marsh, rises the rocky ridge overlooking the Hudson at West Hoboken, and the beautiful wooded heights, called the Bergen hills, from a pretty Dutch village of that name in their rear; a part of the country made classical by the genius of Washington Irving in his inimitable History of New York. On these hills, as also at their feet, grew, amidst a multitude of other plants, *Cnicus pumilis, Teucrium Canadense, Hedeoma pulegioides* (here called Penny-royal, which it much resembles in scent), *Phryme leptostachya, Physalis pubescens?, Sisyrinchium anceps* or *Bermudianum*, (if they be really different), *Galium circæzans, Monospermum Canadense, Scrophularia nodosa* var. *Marilandica*, (hardly distinguishable even as a form), *Hypericum punctatum* and *H. perforatum, Acalypha Virginica, Elymus hystrix*, and *E. villosus*. In the shady recesses of the rocky woods *Monotropa uniflora* was not uncommon: its pure white stems topped by the large solitary nodding and bowl-shaped flowers, looking like so many tobacco pipes stuck in the ground, are obviously suggestive of its familiar appellation of Indian Pipe. The following British species are completely naturalized on the rocks, and have now quite the aspect of indigenous productions: *Origanum vulgare* (abundant), *Verbascum Thapsus*, and *V. Blattaria, Nepeta Cataria, Carduus lanceolatus, Solanum Dulcamara, Leonurus Cardiaca, Linaria vulgaris, Pastinaca sativa.*

The ligneous flora of this neighbourhood included the following species, *Platanus occidentalis*, Red Cedar, *Juniperus Virginiana* (*J. Sabinæ* var.?), *Castanea vesca* var. *Americana*, (a very slight and to myself undistinguishable form of the European Chestnut), White Oak (*Quercus alba*), and I think the Post Oak (*P. obtusiloba*), Scarlet Oak (*Q. coccinea*), Red Oak (*Q. rubra*), and Black Oak (*Q. tinctoria*),* Sugar-berry (*Celtis occidentalis,*) Iron-wood (*Ostrya Virginica*), one or more species of Hickory (*Carya*), and Wallnut (*Juglans*), Yellow or Tulip Poplar (*Liriodendron tulipifera*), Red Mulberry (*Morus rubra*), one or more undetermined species of Thorn (*Cratægus*), Wild Cherry (*Cerasus Virginiana,* or *serotina*?) the bark of this is a popular remedy, in great repute all over the United States as a tonic combining a sedative effect, and is exhibited in the form of syrup or infusion), Dogwood (*Cornus florida*), Red Maple (*Acer rubrum*), Sugar Maple (*A. saccharinum*), or Rock Maple (*A. nigrum,* probably only a variety of the last), Sassafras (*S. officinalis*), Black Haw (*Viburnum prunifolium*), American Bladdernut (*Staphylea trifolia*), Smooth Sumach (*Rhus glabra*), and Privet (*Ligustrum vulgare,* naturalized); whilst over these and the smaller shrubs climbed the Virginian Creeper (*Ampelopsis quinquefolia*), Poison Oak (*Rhus radicans*), Green Briar (*Smilax rotundifolia*), Fox Grape (*Vitis Labrusca*), Scarlet or Trumpet Honeysuckle (*Lonicera sempervirens,* rare so far north, and gathered in one spot only), and Waxwork (*Celastrus scandens*). With the exception of the Red Cedar, the trees were all deciduous, so far as I could observe, few or no Pines being intermingled with them.

It was in these marshes at Hoboken, that I first had occasion to notice the prevalence of *Orthoptera* and *Hemiptera* above most other orders of insects, in the United States: a predominance which seems alike conspicuous in the multiplicity of species and of the individuals belonging to each. The various kinds of Crickets, Grass-hoppers, and Cicadas, literally swarm throughout the country, and during the sultry nights of summer, keep up, as by day, an incessant, but ill-assorted concert of the shrillest tones, the din of which I have scarcely heard surpassed by the stentorian vocalists of their order in tropical climes. At this season in America, a traveller in the country must earn his nightly rest by daily toil; for the elements of repose come not in due course with the setting sun, as in Europe; and if he be one of those unhappy wights, whom the God of Sleep habitually forsakes, thrice pitiable is his doom during the hours of darkness. A host of little merry revellers, sworn foes to slumber and without sympathy for slumberers, people every twig of every tree and bush around his domicile, and with their untiring mirth dispel one of night's most solemn but soothing attributes. A serenade of this description, at such a time, and with the thermometer at 85°, or near it, is no lullaby to fevered temples; even should the mosquito not be hovering at hand, watching an opportunity of enjoying undisturbed his nocturnal banquet. In the towns, of course, these sources of discomfort are avoided, or much diminished, those arising from the heat excepted, which, from the want of adaptation in the construction of the houses to mitigate the effect of a high temperature, is felt to be most oppressive by the generality of strangers, who are compelled, by the impossibility of procuring accommodation of a more private kind, to put up with the many inconveniences and deficiencies of an American hotel. Of these establishments, which so abound in every city, town, and village, throughout the republic, that it might be distinctively called the land of hotels, even the largest and best conducted in the principal cities, with the most imposing exteriors, fall short, in their internal arrangements, of our English ideas of comfort and retirement. In most, if not all, the provincial towns, and even in the capitals of the larger states, the hotels, not excepting those of the better class, are usually indifferent, and sometimes execrable, in spite of their palace-like fronts, and *ad captandum* appendages of pediment-crowned columns and flights of stone or marble steps at the principal entrance, always in a state of filthiness beyond description from the ceaseless expectorations which defile both them and the halls and corridors to which they lead; whilst the long lines of sleeping apartments, the only asylum of quiet and retirement from the noise and bustle which pervade the ground and first floors, with their bare, white-washed walls and scanty furniture, cold and cheerless to the eye in winter, and especially offensive, from the glare in summer, resemble rather the wards of a hospital or union poor-house, than rooms set apart for the reception of the travelling (and from the system of domestic economy prevalent in the country, often stationary) members of an affluent community. Barring the odious practice of expectoration, and its visible and disgusting results, which admits of no apology or even extenuation, and the too commonly disgraceful state and unseemly arrangement of certain indispensable back premises, even in establishments of such high character as the Astor House at New York, the traveller in the United States will rarely have cause to complain of want of cleanliness in the apartments, either public or private, which he may occupy or frequent; for, with the above most anomalous exceptions, the Americans of the upper and middle classes, at least, are neat and clean in their persons and houses; and the habit of spitting, universal and intolerable as it is, does not here, as in France and other continental countries of Europe, annoy the senses of sight and hearing at the crowded table d'hôte, or in the elegantly furnished and carpetted saloons, appropriated to the ladies and their friends and acquaintance of either sex. From the above censure of American hotels, I must, however, in justice, except two splendid establishments, recently set on foot in Boston: a city which seems to take the lead of all others in the march of social refinement. The hotels known as the Revere and Adam's houses, whilst second to none in the Union for cleanliness, civility to the guests, and excellence of the *cuisine*, are fitted up, at no increased charges to the public, with nearly every requirement of modern taste and civilization.

---

* The tree, which goes under the name of *Q. biennis* amongst American botanists, appears different from that so called in Europe, and has much smaller flowers.

August, 5th. Left New York for Philadelphia by the railroad, 98 miles, arriving late the same night in "the quaker city:" an appellation it still deserves; for although the "friends" now form but an inconsiderable fraction of the entire population, estimated at about 250,000, there is an air of quiet, but substantial quaker-like respectability about the town, in strong, but not unfavourable contrast with the spirit of improvement and rivalry which stamps its character upon the brick and mortar of the great emporium I had just quitted. In few cities will one find more that is handsome and less that is magnificent in public and private buildings, than at Philadelphia; in fact, if we except the splendid pile of the Girard College, (the garden of which is seriously impaired by the disjunction of its colossal component masses,) the city does not possess a single edifice of any architectural pretensions. But in the spaciousness and regularity of its streets and squares, yet without the monotony of undeviating uniformity, and in the skilful combination of plain with costly materials, (brick with marble), to produce elegance of effect without lavish expenditure, the mind of William Penn and his immediate descendants is evinced in his later posterity, by the modern embellishments of this the ancient capital of Pennsylvania. The Quakers here have discarded much of that peculiar formality of dress which distinguishes the sect in England, and nearly assimilate in their costume to that often worn by our clergy of the established church: a plain black coat, with a low stand-up collar, being often the only mark of recognition, in the absence of the broad-brimmed beaver, now pretty generally discarded in favour of a covering of the head of more conventional and republican form and dimensions. Sydney Smith's sarcastic designation of "the drab-coloured men of Pennsylvania" was as inapplicable, in point of fact, to the Quakers of the present day in America, as his imputations on the integrity of that respectable body of her citizens are unjust and groundless.

The country between New York and Philadelphia reminded me of some parts of the south of England. The smaller towns and villages here, as, indeed, commonly all over the Union, are neat, clean, and pretty, but deficient in picturesque effect, from the comparative newness of all about them, which time has not yet softened down to harmonous colouring; nor will wooden tenements, the walls of which are milk-white, picked out, in true Dutch fashion, with pea-green doors and windows, submit in their gaiety to such sobering effects of age, which may indeed shatter and destroy a "frame-house," but can never render it venerable, even in ruins.

The streets of Philadelphia are planted with trees of the same kind as at New York, with the addition of the White or Soft Maple (*Acer dasycarpum,—A. eriocarpum*, Mx.), which is here a general favourite, affording at once a fine shade, and being free from the attacks of insects, and the other objections urged against the species commonly employed for that purpose, and to which I have alluded. The spacious area of Washington Square, much resorted to as a promenade on fine summer evenings, is tastefully laid out and planted with a variety of indigenous trees. A list of these is kept for public inspection in a sort of watch-box, together with a ground-plan of the square, on which are numbers referring to the names on the list, and pointing out the precise place of each species in the square, which may thus be readily found when sought for; though labelling the specimens themselves, as practised in Kensington Gardens, would still further facilitate their examination.

I was surprised to see in the gardens of the Pennsylvania hospital, as well as in some gardens in Arch (Mulberry) Street and elsewhere, Fig-trees rising above their walls. The trees were small, but looked healthy; and their trunks were protected by contiguous buildings. Several of them bore small, and apparently abortive fruit; nor did I meet with any figs of native growth in the remarkably well-supplied markets of the city. It is only in the town, where it is sheltered from cutting winds by adjoining houses, and the effects of severe frost are mitigated by radiation from their walls, that the Fig can thus partially resist the winters of this latitude (39° 58′) on the eastern side of the American continent. The trees are, however, I understand, killed back in unusually severe weather; and some are occasionally protected by matting; or their branches are laid down, and covered with straw or earth: the greater number are left to take their chance; for the damage is speedily repaired by fresh and vigorous shoots from the trunk, which is seldom destroyed, or, at all events, from the root, which is sure to escape injury. I remember when in Hungary, in 1827, to have been shown numerous Fig-trees growing perfectly spontaneous in rough grounds, at the southern base of the

Blocksberg, at Ofen, (Buda*) lat. 47° 29′ N. long. 19° 5′ E., and bearing abundant crops of extremely small, but very luscious fruits, but which, from the rigorous winters of that deeply continental city, could not rise above two or three feet from the ground, being compelled to take the form of straggling bushes, with long trailing branches ascending at their extremities, which were protected from the severe frosts of the climate by the joint agency of terrestrial radiation, and a natural covering of snow. The greater, and perhaps more prolonged heat of the summer at Philadelphia, permits the Fig-tree to reach a height it could not attain in a climate less favourable to the perfect ripening of its wood. The most northerly point at which I have myself remarked well-grown Fig-trees on the Atlantic sea-board, was at Norfolk, in Virginia (lat. 36° 50′), where the Pride of India (*Melia Azedarach*) still acquires a timber-like size; but that town has quite a maritime climate at the mouth of the Bay of Chesapeake and it lies directly open to the Atlantic itself. In the gardens of Philadelphia the common white Jessamine (*Jasminum officinale*) thrives luxuriantly; and our European Ivy grows well as far north at least as Boston, being as much a favourite in America, as the Virginia Creeper (*Ampelopsis quinquefolia*) is with us. In that country the Ivy should be planted in a north exposure; since it is extremely liable to suffer from the severe frosts that even in the southern states often succeed to very warm days in March and April.

This was the hottest day to my feelings I had experienced since landing in America, the thermometer standing at $85\frac{1}{2}^{\circ}$ at 4 h. 35 m., P.M., in the great airy hall of Jones's hotel in Chesnut Street. A whitish or bluish milky haze pervaded the atmosphere: a phenomenon of such extremely common occurrence throughout the United States, as to have excited much speculation as to its cause, which seems by no means well understood. This haze much resembles what often accompanies an easterly wind in England, but occasionally assumes the appearance of a dense smoke, obscuring

---

[*] Buda and Philadelphia are nearly on the same isothermal line, the mean temperature of winter being 33 98′, and 32 18′ respectively. That of summer at the two places is 70 52′, and 73 94′.

the sun, and effectually veiling all objects at even a moderate distance from the observer. It is said to prevail more in the spring and fall than at any other time of the year; but during the twelve months I passed in America, it was of continual recurrence at short but uncertain intervals, in all parts of the country, and at every season alike. From the 30th of June last till the 16th of July inclusive, which I spent in Massachusetts, and principally at Boston, "smoky" weather prevailed for about half the number of days comprised in that period, sometimes so dense as to approximate in opacity to the atmosphere of the heart of London, and provokingly to shut out all view of the pretty landscape around. This was especially and inopportunely the case on the 16th, when I left in the steamer for England, at which time the fine scenery of Boston Harbour was invisible from her crowded deck. I witnessed this phenomenon in singular intensity at Savannah two months before. I shall have occasion to mention it hereafter, and will now only refer the reader to the details, given by Mr. Thompson in his very curious and amusing History of Vermont,* of this smoky state of atmosphere, and the extraordinary darkness it has sometimes occasioned, approaching at midday to that of night, so that a book of ordinary print could not be read by the sun's light.

Aug. 6th.—Started this morning by the "*accommodation* (railway) *cars*" for West Chester, a borough thirty-one miles due west of Philadelphia, the capital of Chester County, and the residence of Dr. Darlington, well known for his valuable contributions to American Botany, and his admirable illustrations of the plants of Chester County, first published in the form of a Catalogue,† and subsequently expanded into a descriptive Flora of the district of Pennsylvania:‡ a work, which for clearness of definition, originality in execution, and accuracy of description, has few equals in either hemisphere amongst compositions of this class, for which, in these and some other respects, it may well furnish a model. To this gentleman I was the bearer of an introduction from an eminent English botanist; which was met, on his part, and that of a little knot of literary and scientific friends, his colleagues, by the free and unfeigned extension of the same kindness and courtesy towards myself, which every Englishman, who comes duly commended to their good services, is certain of receiving from Americans in every section of their vast territory.

---

* History of Vermont, Natural, Civil, and Statistical, by Zadock Thompson, Burlington, Vermont, 1842, 8vo.

† Florula Cestrica. W. Chester. 1826. 8vo.

‡ Flora Cestrica. W. Chester. 1837. 8vo.

These "accommodation trains" form a branch of railway economy peculiar to America, and though intended to meet an exigency in that country which does not exist in our own, arising from the generally bad state of the high-road, will, in all likelihood, eventually become amongst ourselves the medium of communication betwixt places at moderate distances apart, as this mode of travelling gains more in popular estimation than it does at present. With a majority of the English public, the abandonment of our magnificent highways by the main streams of commercial and private intercourse, and the ascendency of the locomotive with its gigantic powers of traction over the well-appointed, light post-coach of former days, and its splendid team of thorough-bred cattle, is still a topic of never-ending lamentation and regret, affording free scope to the suggestions of ignorance, prejudice, and timidity against railroads, which we must not expect to have silenced, till the glorious reminiscences of the old coaching era have passed away with the generation that witnessed them. We grumble at railroads, yet go by them notwithstanding; and this, not simply because the alternative is denied us of choosing between the old and new modes of locomotion, but by the argument *ad crumenam*, an absolute, irresistible pocket-proof and conviction of the superior cheapness as well as celerity of the Railway system; a conviction which, whilst we cannot stifle, we are unwilling to avow as a ground of preference. But in America, where, to bowl along on a macadamized highway, at the rate of ten miles an hour, with the command of a view not bounded at least by cutting or tunnel, is a luxury untasted by the many and rarely enjoyed by the few; the railway and steamboat are substitutes for good roads, well befitting her restless and time-serving population. Accordingly, short single lines are often laid down betwixt places we should think had scarcely traffic enough to pay the cost of construction, far less to enable the concern to be worked at a profit to the company. The inflexible regulation as to time and stoppages, so requisite for safety on longer and main lines, are relaxed on these minor railroads for the accommodation of passengers, who are taken up or put down at intervals, so short as pretty completely to satisfy the requirements of individual convenience or caprice; and as the trains run at few and distant periods during the day, no risk is incurred by not keeping strictly to time. The "cars" to West Chester, which leave Philadelphia twice in the day, namely, at 8 A.M. and 3 P.M., are, however, pretty punctual, and make the transit in about three hours or a little less.

I found the worthy Doctor at the Chester County Bank, (of which he is president), a chaste and elegant Doric structure, and where he introduced me to his botanical and banking colleague, David Townsend, Esq., the cashier, who vied with his coadjutor in showing me every kindness and attention in his power on this and my two subsequent visits to their "village," as they are wont modestly to designate the important and still increasing capital of Chester County. It is in fact a handsome, well-built town, laid out, as all towns of modern date are in America, with great regularity, the streets crossing at right angles; but the houses, which are mostly of brick, stand detached or few together, and though various in their architecture are many of them elegant and commodious, and usually have neat gardens about them. The new court-house, when completed, (which is probably the case by this time), will be a sumptuous building, and with the bank and principal church would do credit to places of ten times the size and population of West Chester. It possesses an institution (the Chester County Cabinet of Natural Sciences) for the promotion of Natural History and other branches of knowledge, with a very respectable Museum, in which is an Herbarium of considerable extent, rich in North American plants, formed by the exertions of Dr. Darlington, and kept in excellent order. Lectures are occasionally delivered to a class at this institution, which meets with much encouragement here, as everywhere else in a country where the mental cultivation of the mass of the people is justly held of paramount importance to the well-being of the common-wealth.

I accompanied Dr. Darlington to his residence, at that time about half a mile from the town, into which he has since removed. At the gate grew a gigantic specimen of the Osage Orange (*Maclura aurantiaca*), then laden with its yet unripe fruit, which here comes to perfection. Toward dusk we strolled over his little farm of about sixty acres, partly fenced in with quickset hedges as in England, but formed of the Washington Thorn (*Cratægus cordata*), which well supplies the place of our English White-Thorn, making as handsome and durable enclosures. Here I saw, for the first time in the States, a few Fire-flies or "lightning bugs" (*Lampyris*), of which there are several kinds, that, like those of the West Indies, emit their light in momentary gleams or flashes, usually of a greenish or bluish white; but in the present case the light so exactly counterfeited in its redness the sparks from burning wood, that I could almost imagine myself a little nervous, were I to see these brilliant creatures flitting about any thing so inflammable as a barrel of gunpowder. Having delivered my credentials, I returned on the 6th to Philadelphia for a day or two. Whilst shifting a few plants this evening after dark I several times noticed what I at first took for a large spider running over the floor, but subsequently perceived it to be a species of *Cermatia*, a genus of *Myriapodes* allied to *Scolopendra*, and the first of the kind I had seen alive. It ran with such extreme rapidity as to baffle my attempts to secure it: a task the more difficult as I did not wish to run the risk of being bitten by directly seizing on an animal that, to judge from the will and ability of his near relatives, the *Scolopendras*, to resent an infraction of their right to freedom, might be disposed to act in a similar way upon emergency. A more familiar acquaintance with the creature soon taught me, however, that I had nothing to fear from its powers of annoyance or defence: I subsequently noticed it repeatedly in the south, where it may be often seen hurrying rapidly across the table, books, or person of the observer. The houses in this city and in most others of the Union are infested with a minute red ant, that occasioned me some anxiety for the safety of my dried plants, which they certainly will attack, though in a degree much less injurious than in the case of the zoologist or entomologist, to whose collection they show themselves most unsparing enemies.

Aug. 10th.—Walked out to Bartram's Botanic Garden at Kingsessing, the earliest ever formed in America, and possessing additional interest by association with the name of its founder John Bartram and of his son William. The travels of the latter over the southern states, towards the close of the last century, from the florid and enthusiastic style of the narrative, have a fascination about them which has made the book familiar to most young naturalists.

The garden lies on the west bank of the Schuylkill about two miles below the city, and is now owned by Colonel Carr, who married a grand-daughter of the founder. It is of very moderate extent, but in a wretchedly neglected condition, being a complete wilderness of trees and shrubs, that have been suffered to overrun everything, except the small part reserved as a nursery ground, in which fruits, vegetables, and a few flowers are raised for sale by the proprietor; nor is there much amongst the remaining specimens planted by the two Bartrams to interest a botanist of the present day. The chief object of attraction is a magnificent deciduous Cypress (*Taxodium distichum*), the trunk of immense girth and at least seventy feet in height, fully equal to any specimen of the tree, since seen by myself in the southern swamps, or on the Mississipi. A fine Osage Orange (*Maclura*) in abundant bearing, a Pecan nut (*Juglans olivæformis*), and a tree of the Overcup White Oak (*Quercus macrocarpa*) all western species, were on that account interesting. On the marshy banks of the river, between Gray's Ferry and the garden, grew *Zizania aquatica* (Canada or Indian Rice), now in full flower, Pickerel Weed (*Pontederia cordata*), *Sagittaria sagittifolia* var. *latifolia*? the leaves of which are far larger, broader, and less acutely auricled than in our common English form, which I do not recollect ever to have met with in America. *Solanum Carolinense* (here I believe reaching its polar limit) *Impatiens fulva*, the Button-Bush (*Cephalanthus occidentalis*), *Bidens bipinnata* and *chrysanthemoides*, *Acnida connabina*. In the moist pastures *Cassia Marilandica* formed tufts; and in some swampy willow thickets I picked *Stachys* (*aspera* ?), *Isnardia palustris*, *Polygonum scandens*, and a *Cuscuta* allied to *C. Europea*, which invested the lower willow bushes with its bright red or yellow entangled stems in greater luxuriance and profusion than I ever witnessed, excepting in the island of Grenada, where not only the shrubs, but trees of twenty or thirty feet in height, were so matted over by a Dodder with racemose inflorescence, as to have their leaves and branches in a great degree concealed from view, the parasite having apparently no attachment to any particular natural order, but clinging impartially to all plants within its reach.

West Chester, Aug. 11th.

Set off with D. Townsend, Esq., to visit the North Valley Hills, about six miles from this borough. The road was very bad in places, but the country beautifully varied and undulating, much resembling some parts of England in its intermixture of pasture, arable, and woodland, with neat farms, and all the features of a prosperous agricultural district. Our vehicle, the ordinary travelling carriage of the country, called a Rockaway, was of a singularly light construction, a sort of calèche, on two wheels, of very large size, but excessively narrow and slight in appearance, though really capable of withstanding the severest strain, the spokes being of hickory, and the naves of the common Turelo, Black or Sour-gum (*Nyssa multiflora*), which, like the former, is of extreme toughness, and still more difficult to split. The great diameter and narrowness of the wheels enable them to cut their way through the deepest mud or sand; where those of lesser circumference and broader gauge would infallibly stick fast, whilst by their great distance apart, and projection from each side of the body, the chance of upsetting is materially diminished. The trees were entirely of the hard-wood kind, (the Pines being sparingly found in this part of Pennsylvania), and consisted chiefly of the following species: Black and White Oak (*Quercus tinctoria* and *alba*), Red and Scarlet Oaks (*Q. rubra* and *coccinea*), Post Oak (*Q. obtusiloba*), Rock Chestnut Oak (*Q. mantana*), Swamp White Oak (*Q. discolor*), Chestnut (*Castamen vesca* var. *Americana*), Tupelo, Sour or Black Gum (*Nyssa multiflora*), Red or Swamp Maple (*Acer rubrum*). Of these, the White Oak, so called from the colour of the bark, which looks as if rubbed over with wood ashes, might, perhaps, be perfectly grown in our own country; for its timber is little, if at all, inferior to its European representative, *Q. pedunculata*. Wherever I have seen this tree, I have remarked the regularity of outline and straightness of trunk which distinguish it from the British species: the leaves are more deeply and regularly incised; and its whole appearance is neater, but less picturesque. For tree timber it might be less valuable than our own oak, but would furnish longer and straighter sticks for sawing into planks, or for beams, &c. *Quercus tinctoria*, usually called Black Oak from the dark hue of the bark, (which is exported, with that of some other kinds, to Europe as Quercitan, for dyeing yellow,) comes, perhaps, too near *Q. rubra* and *coccinea* in character, but is readily known (from the former) by its acorn, which is smaller and seated in a cup that tapers at the base. At a distance, this tree is easily recognised by the heavy character of its foliage, in consequence of the more unevenly and obtusely sinuate and lobed leaves, that vary greatly in form on the same tree, and are often scarcely more than separately toothed. *Quercus coccinea* resembles the Black Oak in the size and shape of the fruit, which is sessile as in that, but the leaves, though similar, are always deeply sinuate and lobed, and are remarkable for the intense brilliancy of their scarlet colours in autumn. The much larger acorn, in a shallow cup, with very smooth, compact scales, distinguishes *Q. rubra* from its allies; but the greatest similarity runs through the oaks of the *Rubræ* sections, in the size, shape, and division of their leaves; though a practical eye can generally distinguish them without seeing the fruit. The other trees and shrubs were Yellow or Tulip Poplars (*Liriodendron tulipifera*), Alder (*Alnus serrulata*), Persimon (*Diospyros Virginiana*), Sassafras (*Sassafra officinale*), Spice-wood or Fever-bush (*Benzoin odoriferum*), Arrow-wood (*Viburnum den-*

tatum and *accrifolium*), Smooth Sumach (*Rhus glabra*, the fruit of this is very agreeably acid), Elder (*Sambucus nigra*, var.? *Canadensis*), Dog-wood (*Cornus florida*), Huckleberry (*Vaccinium resinosum* and *Pennsylvanicum*), Winterberry (*Prinos verticillata*), *Clematis Virginiana*, with many others. Entering a thick wood, we found the beautiful *Habenaria ciliaris* with its spikes of fine orange-coloured flowers in full perfection, also *Cypripedium humile, Discorea villosa, Chimaphila umbellata*, and *C. maculata, Tephrosim Virginica, Polygala purpurea*, and several species of *Aster*; whilst under the bushes grew the fine Club-mosses (*Lycopodium complanatum* and *dendroideum*). In the same wood was a fine specimen of the Poison Ash (*Rhus venenata*), so remarkable for the injurious effect of its exhalations on certain constitutions, and their absolute inertness in respect to others. To this latter class belong Dr. Darlington and myself, on whom the tree exerts not the smallest noxious influence; whilst to my companion on the present occasion, it proves so inimical that he is unable to gather a leaf, nor even closely to approach the tree without experiencing severe effects: he therefore contented himself with pointing out the species to my notice at a respectful distance, accompanied by a friendly caution against relying too securely on my supposed invulnerability, while he prudently declined proffering assistance in procuring specimens. Emboldened, however, by the impunity with which experience had a little before taught me I might venture to handle two scarcely less virulent shrubs of the same genus, namely, the Poison Vine and Poison Oak (*R. radicans* and *Toxicodendron*), I hesitated not to march up boldly to this western Upas tree; and after stocking my vasculum with a sufficiency of its dismembered branches, I rubbed the bruised leaves over my face and hands, the pores being then freely open, through the intense heat of the weather. My friend said nothing; but I read amazement in his countenance at my presumption, and a shrewd guess was perhaps passing in his mind that the penalty would be exacted of my rashness in due time; nor indeed, to say the truth, was I quite without misgivings as to the possible consequences of my temerity, until the full interval had elapsed within which the symptoms of poisoning usually manifest themselves. I believe the majority of persons are, like myself, unsusceptible of the virus of this, or the two other venomous Sumachs; but the numbers amongst those of my own acquaintance who have expressed to me their dread of contact or proximity to one or all of these shrubs, clearly show that their power of inflicting injury extends to a large proportion of individuals, perhaps as much as one in three, or even two in five. My friend the Rev. Dr. Bachman of Charlestown, S.C. related to me that being once on a botanical excursion with some friends in the neighbourhood of that city, they came upon a specimen of the Poison Ash, (a rare tree in the low country of Carolina, and which some of those present had never seen growing,) and felt naturally desirous of gathering specimens for examination. This they proceeded to do, though warned of the consequence likely to accrue from handling it by the doctor, who stood aloof from a danger which he knew to be inevitable in his own person on near approach, or contact. The result was, some of the party suffered severely; the inflammatory action reaching up the arms to the trunk in one, in another only as high as the elbows; whilst in a third, the effects were confined to the hands, which, as is usual in these cases, became sadly swollen, inflamed, and finally ulcerated. The rest mostly escaped the poison. On his return home, Dr. B. found a branch of the shrub in his vasculum, which had been put there by some sceptical joker amongst certain of the party, who affected disbelief in the poisonous properties of the plant. This he requested his daughter, who was not susceptible of the poison, to take out of the box and destroy, but at her suggestion permitted it to be dried for his herbarium. The next day symptoms of poisoning came on: intumescence of the entire body and lower extremities, attended with intolerable pain and irritation, confined him to bed for several days; nor was it till after many weeks that the ill effects had so far subsided, that he was able to resume his usual clerical duties: so violent indeed were the symptoms, that serious results were for some time apprehended. For several years after this accident my friend was subject to a periodical recurrence of the erisypelatous inflammation, which marks this particular poison, a very full account of which is given by Dr. Bigelow, in the first volume of his American Medical Botany, coinciding exactly with what I have myself witnessed of its effects, in a more mitigated degree, in the person of another friend, whose case I shall refer to hereafter. Dr. Bachman is confident that he did not approach the tree: the poison must have been communicated, either through slight inadvertent contact with the specimen in the box, or by the exhalation from it on opening the latter.

(*To be continued.*)

BOTANICAL INFORMATION.

M. Borgeau's *Plants of the Spanish Pyrenees.*

The sets of this beautiful collection of plants, made on the Spanish side of the Pyrenees, (in our case amounting to seven hundred and forty-three species), are now named and in the course of distribution from Paris. There are some, though but few, entirely new species, several of considerable rarity; and like those of the same indefatigable collector, made in Teneriffe, they are first-rate specimens, and as reasonable in point of price as they are good in quality, (£1. 2s. the hundred species). The friends and patrons of M. Borgeau, have, we believe, now advised his making collections in Sicily. Wherever he goes, so indefatigable a botanist will procure valuable materials; but a selfish wish will come over us, that the present political troubles of that unfortunate island may be the means of directing his steps to some more productive region.

Plants of Canara, *distributed by* M. Hochstetter.

Canara occupies a line of coast, on the west side of the peninsula of India, about two hundred miles in length, lying immediately north of Malabar, of which the capital is Mangalore. A portion of it is very hilly, and it cannot fail to contain a vegetation similar to that of Malabar, which would tend to illustrate many of the little known species of the *Hortus Malabaricus*. M. Hochstetter offers sets of specimens from this interesting region, of which ours contains three hundred and fifty, and these at the moderate price of £4. 4*s*. We wish we could pay the same compliment to the goodness of the specimens here, that we have done to Bourgeau's, from the Pyrenees; but the collector, whoever he may be, seems to have cut them down to the lowest possible size; and the foliage and the flowers have too often parted company. On the other hand, many of the species are rare, and not a few entirely new; and the greater number appear to be named by the excellent Miquel. We have reason to believe that better specimens of other plants are on their way from Canara. But whether the collector desires to benefit botany or himself, we would strongly urge him to send such specimens as will give an idea of the noble vegetation of that country, and such as will serve, by the presence of good flowers, and, if possible, fruits, for analysis and for description. For want of more perfect specimens, some very glaring errors are excusable in their present denominations:—we find a bad sample of *Tea*, called *Eurya*;—and a *Sarcococca*, called *Myrica*;—a *Gmelina*, named *Premna*, &c. We are sure the subscribers would willingly pay a higher price for better specimens.

Death of Dr. Thomas Taylor.

Botany has sustained a great loss in the recent death of our valued friend, and coadjutor in the first and second editions of the *Muscologia Britannica*, Dr. Taylor, which took place, we have reason to believe, after a very short illness at his residence, Dunkerran, Kenmare, south of Ireland. Few naturalists had studied more deeply, and few more successfully, as his various writings testify, the Cryptogamic Plants of all parts of the globe, especially the *Musci*, *Hepaticæ*, and *Lichens*, and the recent additions to his Herbarium, many of which we ourselves had the happiness of contributing, would have given him occupation for many years to come, in the determining and describing them. During the existence of the Royal Cork Scientific Institution, Dr. Taylor was appointed Lecturer on Botany and Natural History there; but, on the breaking up of that establishment, he never after engaged in any public employment, and his circumstances did not require that he should devote much time to medical practice, a profession for which he was destined. He thus was enabled to make the study of botany the main business of his life, and few men devoted themselves to it with greater ardour. Besides his valuable contributions to the *Muscologia Britannica*, he wrote an admirable Memoir on the *Marchantiæ*, illustrated with many figures, which appeared in the seventeenth volume of the Transactions of the Linnæan Society; he contributed largely to the Cryptogamic portion of Dr. Hooker's *Flora Antarctica*; and the late volumes of the present Journal bear testimony to his deep knowledge of the *Lichens* and *Hepaticæ*: nor is our portfolio without materials for our future numbers, which we lament will thus constitute posthumous memoirs. Dr. Taylor possessed a mind well stored in various branches of science and literature, while his gentle and amiable manner rendered him a great favourite with all who had the happiness of his acquaintance; and we well know that during the distressful times of the south of Ireland, in the winter of last year, his medical knowledge, and his purse, too, were alike employed in bettering the condition of his poor neighbours.

Dr. Taylor's Herbarium, eminently rich in Cryptogamiæ, his Library, and his Microscopes, will be, bye-and-bye, offered for public sale, or disposed of by private contract.

DR. HARVEY'S *appointment to the Chair of Botany in the Dublin Institution.*

While we have to lament, on the one hand, the severe loss Ireland has sustained by the death of Dr. Taylor, we have to rejoice on the other, at the appointment of another of her favoured sons, Dr. Harvey, to the Botanical Chair at the Royal Dublin Institution. Happily, he is still allowed to retain his position of Conservator of the Herbarium in Trinity College; and thus, that Herbarium, which has been so rapidly progressing under his auspices, cannot fail to be of the utmost importance to him in the instruction he is required to give in his professional capacity; while his new appointment, his connexion with the noble garden of Glasnevin, and the influence to be derived from that position, will equally be of service, both directly and indirectly, to the College Herbarium.

NOTICES OF BOOKS.

GASPARRINI; *Ricerchi sulla Natura del Caprifico, e del Fico: e sulle Caprificazione.* Napoli, 1845. 4to.

Although published in 1845, this work has but recently reached our hands, through the kindness of its author. Besides treating on the curious subject of caprification (in an Essay too long for extraction), Gasparrini here establishes several new Genera of the original *Ficus,* illustrated by beautiful figures and careful analysis; and he has given also a plate illustrative of the Insect engaged in the work of caprification. The type of his Genus, 1, *Ficus,* is the *Ficus Carica, fœm.* L. et alior. 2, *Caprificus,* Gasp., is represented by *Ficus Carica androgyna,* L. et auct. 3, *Ficus stipulata,* auct., *Tenorea* (n. gen.) *heterophylla,* Gasp. 4. *Urostigma,* Gasp., includes *Ficus religiosa, F. Benghalensis,* &c. 5, *Ficus elastica,* auct., which affords the Caoutchouc of the East Indies, is *Macrophthalma,* Gasp. 6, *Ficus leucosticta,* Spr., is the Genus *Cystogyna,* Gasp. 7, *Ficus Saussureana,* DC., and *F. galactophora,* Ten., are *Galoglychia,* Gasp. 8, *F. oppositifolia,* Willd., is *Covellia,* Gasp. 9, the *F. Sycomorus* (*sycamine* or *sycamore,* of Scripture), is the Genus *Sycomorus,* Gasp.; and lastly, *F. lutescens,* Desf., is *Erythrogyne,* Vis.

A more perfect arrangement of the Genera and species of Figs is, as our readers are aware, in course of publication in the pages of the present Journal by Professor Miquel.

Sur la Famille des LINEES; *par* J. E. PLANCHON, *Docteur-ès-Sciences.*

(*Continued from Vol. VI.* p. 603.)

REVISIO ORDINIS LINEARUM.

LINEÆ auct. (adjectis generibus.)

SECT. I. EULINEÆ.—*Lineæ,* DC.—Endl.

Gen. 1. RADIOLA Dill.—Endl. gen. no. 6057.

Sp. unica. R. *linoides,* Gmel. — DC. Prod. vol. i. p. 428. — Reichenb. Iconog. fig. 5152.

HAB. in Europa fere tota a provinciis meridionalibus Sueciæ et septentrionalibus Scotiæ ad fretum Gaditanum; nec non in Madera et in regno Maroccano.

Gen. II. LINUM, L.—Endl. (excl. sp.)—Reichenb. l. c. tab. 5153 —5175, B.

(Vid. supra Charact. gen. p. 593, et ejus divisionum, p. 597.)

Subgen. I. *Eulinum.* — *Adenolinum* et *Lini* sp. Reichenb. — *Eulini* sp. Griseb.

Ser. *Protolinum.—Lini sp. Reichenb.

† Stigmata longa lineari-clavata, stylo continua.

Sp. 1. L. *usitatissimum,* Mill. Annuum; caule basi simplici, erecto; petalis crenatis; capsulæ calycem vix excedentis septis semiseptisque margine interno glaberrimis.

HAB. Verosimiliter ex Oriente ortum, nunc cultura per regiones temperatas utriusque orbis diffusum.

L. usitatissimum, Mill. Dict. Mutel, Fl. Franc. vol. i. p. 179.

L. usitatissimum, L. sp. p. 397 (excl. var. γ et ζ), non. L. Herb. Curtis, Fl. Londin. fascic. 5, tab. 22. Reichenb. Icon. fl. Germ. fig. 5155. (Icon utraque optima, sed synonymia pro parte erronea.)—*L. usitatissimum a vulgare,* Schubl. et Mart. ex Koch syn. fl. Germ. ed. ii. p. 140— *Schleisslein, Dreschlein* ruricolis Germaniæ ex Koch.

2. L. *humile,* Mill. Annuum; caule basi simplici, erecto; capsulæ calycem subduplo superantis septis semiseptisque margine interno ciliato-pilosis.

Hab. Cum priore passim colitur. Specimina vidi Milleriana in Herb. Banksiano; Linneana in summi magistri herbario, nomine L. Sibirici ejus manu inscripta; (hæc in hortum Upsaliensem e seminibus Sibiricis introducta;) Griffithiana, e regno Cabulico, Herb. Hook.; Coulteriana, e Mexico, Herb. Hook.; nullibi verosimiliter spontanea, nisi forte e campis satis evadat.

L. humile, Mill. Dict. no. 2.—*L. sativum, Africanum, latifolium, fructu majore.* Tournef. inst. (ann. 1719) p. 339 (fide Linn. in Herb.)—*L. sativum, humilius, flore majore*, Boerhaave, Ind. alt. (ann. 1720) p. 284 (ex diagnosi).—*L. usitatissimum* var. γ, L. sp. p. 397.—*L. Sibiricum*, L. Herb.! nec tamen L. sp.—*L. usitatissimum β crepitans*, Schlubl. et Mart. ex Koch syn. fl. Germ. (ed. 2) p. 140.—*L. crepitans*? Dumort. fl. Belg. Prod. 111 ex Walpers repert. vol. i. p. 287.—*Springlein, Klanglein* ruricolis Germaniæ ex Koch.

Obs. Cette synonymie des deux Lins cultivés rappelle le peu d'auteurs qui ont su les distinguer, et la centième part de ceux qui les ont confondus. Linnæus, qui ouvre la liste des derniers, commit cette méprise, comme tant d'autres du même genre, à cause de l'imperfection des matériaux qu'il eut à mettre en œuvre. Ainsi, tandis que de l'amalgame de deux espèces mal définies dans les livres, il fit son *L. usitatissimum*, son coup d'œil le servit mieux pour reconnaître ces espèces dans la nature. C'est ce que prouve la note suivante écrite de sa main en marge de son exemplaire du *Species* (edit. 2, ann. 1762),* correspondant au *L. usitatissimum*, mais ayant dans le fait pour objet un échantillon de *L. humile*, cultivé dans le jardin d'Upsal, et conservé dans son herbier sous le nom provisoire de *L. Sibiricum*.† "*Varietatem*

---

* Pour l' avantage de consulter les précieuses reliques que possède la Société Linnéene je dois mes sincères remerciements à M. Kippist: pour l' usage des richesses du British Muséum à M. Robert Brown et à M. Bennett; pour l' étude des espèces Britanniques à la Société Botanique de Londres; enfin à M. Lindley et à M. Lémann pour le prêt le plus libéral des Linées et d' autres familles de leurs herbiers. J' aurais dû placer le nom de Sir William Hooker en tête de cette liste, s' il n' était facile aux botanistes de reconnaître à quelle source principale je puise les matériaux de mes essais.

† Linnæus a décrit sous ce nom une plante très différente, qui n'est qu'une des mille formes du L. *perenne*.

hujus speciei (i. e., L. usitatissimi) *ex Sibiria habui, duplo majorem, capsulis majoribus, erectum et rigidiorem, petalis non crenatis, et calycis interioribus laciniis margine ciliatis; sed folia trinervia.*" La taille attribuée à cette plante est en contradiction avec le nom de *L. humile*, que lui donne Miller. Mais cette circonstance seule prouve combien on doit préférer aux caractères généralement variables des proportions, ceux que donnent parfois les organes de la fleur et du fruit. C'est ainsi que l'examen des bords des cloisons et demi-cloisons des capsules du *L. usitatissimum* et du *L. humile* aurait pu depuis longtemps fournir aux botanistes la marque la plus positive de leur distinction. C'est sur ce point que j'espère l'avoir mise en évidence; mais je dois à Brotero le mérite d'avoir dirigé mon attention sur ce caractère, en s'en servant le premier pour distinguer le *L. usitatissimum* de son *L. agreste* (*L. angustifolium*, Hudson).

3. L. *angustifolium*, Huds. Perenne, (primo anno sæpe florens); caulibus pluribus, centrali sæpius proceriore, lateralibus ascendentibus; capsulæ parvæ calyce parum longioris septis semiseptisque margine interno ciliato-villosis; stylis a basi liberis.

HAB. in Europa temperata et mediterranea ab Angliæ comit. Yorkshire et Lancashire et insula Mona (Man), per Galliam, Germaniæ provincias australiores, Rumeliam, provincias Caucasias, Italiam, peninsulam Ibericam diffusa, sed non ubique; in Madera, *Lowe* in Herb. Hook.; Canariis, *Webb*; et Mauritania, *Bové* in Herb. Hook.

L. angustifolium, Huds. Fl. Angl. p. 134. Smith, Eng. Bot. tab. 381. Koch, Syn. Fl. Germ. Reich. Icon. Fl. Germ. tab. 329. (optima). Boiss. Voy. en Esp.! Moris. Fl. Sardoa. —*L. bienne*, Mill. Herb. in collect. Banksiana!—*L. agreste*, Brot. Fl. Lusit. vol. i. p. 481 (Descript. optima).—*L. vulgare*, Linn. Herb.! (specimen Lusitanicanum ex Oporto).—*L. usitatissimum*, L. Herb. nec tamen L. sp. (specimen ex Algeria cum uno ex eadem regione in collectione Boveana obvio plane conveniens, forma vulgari multo procerius).—*L. usitatissimum*, Griseb. Spicileg. Fl. Rumel. vol. i. p. 117, excl. synon. Linnæi.—*L. diffusum*, Schult. Obs. Bot. Reichenb. Icon. exot. tab. 128 (forma plantæ primo anno florentis jam ab oculatissimo Brotero notata).—*L. fastigiatum*? Tausch. (ex descriptione manca).—*L. marginatum*, C. A. Mey. Ind. Cauc. p. 225. Ledeb. Fl. Ross. vol. i. p. 425 an Poir.? (fide specim. e littore Maris Caspii ab Herb. Petropol. communic.)—*L. cribrosum*, Reich. Icon. Fl. Germ. tab. 330.

---

* Dans une plante cultivée au jardin de Kew et que je n'hésite guère à rapporter au Lin dont il est içi question, j'observe que les pétales sont crénelés comme dans le L. *usitatissimum*. Ce caractère est-il en réalité variable? Dans le doute, je n'ai pas voulu le faire entrer dans la phrase caractéristique du L. *humile*.

Obs. Cette espèce, qui ressemble aux deux précédentes, se distingue aisément de la première par les cloisons et demi-cloisons de sa capsule qui sont ciliées au lieu d'être glabres; de la seconde par son fruit de deux tiers plus petit, et de toutes deux par ses fleurs pâles beaucoup plus petites et ses feuilles supérieures très étroites. Elle se présente d'ailleurs sous deux états très différents, suivant qu'elle fleurit la première année, ou que sa racine, devenue ligneuse, produit de nombreuses tiges ascendantes, presqu'égales entr'elles, et qui sont restées peut-être deux ans sans fleurir. Cette dernière forme est celle qu'ont décrite Hudson et Smith. La première, assez variable pour la taille, a presque toujours sa tige centrale très nourrie aux dépens des autres qui restent la plupart stériles. C'est là le *L. angustifolium*, si bien décrit dans le *Flora Sardoa*, et que M. Grisebach regarde à tort comme le L. *usitatissimum*, erreur qu'on est surpris de trouver dans un ouvrage aussi consciencieusement écrit que l'est le *Spicilegium floræ Rumelicæ*, mais dont l'auteur fait entrevoir la cause lorsqu'il dit que le *vrai* L. *angustifolium* recueilli par lui en Allemagne possède des stigmates capités. Ce caractère appartient au *L. perenne*; mais il ne convient pas au L. *angustifolium* des auteurs anglais, de Koch, de Reichenbach, et de presque tous les botanistes. La meilleure description que je connaisse de ce dernier est dans le *Flora Lusitanica* de Brotero.

4. L. *suædæfolium*, Planch. Annuum? multicaule, humile, glaberrimum, glaucescens; foliis alternis, confertis, linearibus, obtusiusculis, integerrimis, marginibus subinvolutis, basi eglandulosis; ramulis axillaribus gracilibus pauci-foliatis, apice uni-

floris; floribus non magnis; sepalis subspathulatis, obtusissimis, integerrimis, petalis pallide cæruleis subduplo brevioribus.

Hab. in Novæ Holl. australis regionibus interioribus. *Lieut. Col. Mitchell.* (ex Herb. Lindley.)

Species distinctissima. Radix simplex, descendens, 3-pollicaris. Caules numerosissimi, basi conferti, erecti, 4–5-pollicares, graciles, teretes, dense foliati. Folia a basi ad apicem sensim majora, suprema 3–4 lin. longa, apice interdum latiora, carnosula, trinervia, illa *Suædæ fruticosæ* referentia. Ramuli floriferi ex axillis fol. superiorum adscendentes, flexuosi, 1–1½ poll. longi, foliis 4–5 cæteris vix minoribus sparsi, sub flore plus minus longe denudati. Flores eis L. *angustifolii* paulo minores.

5. L. *marginale*, A. Cunningh. *mst.* perenne? glaberrimum; caulibus pluribus (an semper?) apice ramosis; foliis lineari-lanceolatis, superioribus angustissimis; corymbis fastigiatis; pedicellis ante et post anthesim erectis, strictis; sepalis ovatis, acuminatis, acutis, integerrimis, albo-marginatis, capsula acuminata parva brevioribus; stylis supra medium connatis.

Hab. In Australia extra-tropica, et in Tasmania.—Novæ Cambriæ regiones sylvaticæ interiores, *All. Cunningh.* Port Stephens, *Domina Parry*, in Herb. Hooker. Port Jackson, *Smith.* Port Philip secus oram australem Novæ Hollandiæ, *Gunn* in Herb. Hook. Sinus regis Georgii? *Baxter*, in Herb. Hook. (ex specimine imperfectissimo). Flumen Cygnorum in ore occidentali, *Drummond*, ibid. Tasmania insula, *Gunn*, no. 71. ibid.

L. marginale, A. Cunningh., *mst.* in Herb. Hook.—L. *gracile*, Smith, *mst.* in Herb.—L. *angustifolium*, DC. Prod. I. p. 426. (quoad stirpem australasicam) non Huds.—L. *angustifolium*, Bartl. in Preiss. enum. pl. 1. p. 161. excl. syn. Huds.

Obs. Cette plante se distingue sans peine du *L. angustifolium*, par ses fleurs beaucoup plus nombreuses réunies en corymbe au lieu d'être éparses sur des grappes presque toujours simples; et surtout par ses styles soudés plus qu'à moitié de leur hauteur. J'ai adopté pour le désigner le nom manuscript de *marginale*, quoiqu'il existe déja un *L. marginatum* de Poiret; parce que cette dernière espèce aurait du être oubliée depuis longtemps, avec le fatras des énigmes indéchiffrables.

6. L. *hologynum,* Reichenb. Annuum? caulibus ascendentibus, subsimplicibus; floribus paucis, laxe racemosis; stylis longe connatis.

Hab. in Bannatu.

L. hologynum, Reich. Fl. excurs. 5164, et Icon. Fl. Germ. tab. 331.

"Ascendens spithameum-pedale, folia linearia pinguioribus individuis superiora lanceolata acuminata, singulis margo læviusculus, nervus solitarius excurrens, inflorescentia rigidula, flores pauci longe pedunculati, sepala e basi latissima, acuminata, late hyalino-membranacea apice ciliata, dorso tenuia uninervia nervo crasso elevato, capsulam acuminatam subæquantia. Flos fere L. *usitatissimi* nec major, stylo ab omnibus Europæis distinctus." *Reich. ex Compend. Fl. Germ.* auct. Bluff. et Fingerhut, ed. Nees ab Esenb. et Schauer, 1836. vol. 1. p. 349.

Obs. Je ne connais cette espèce que par la figure qu'en a publié M. Reichenbach. Elle n'est pas dans les collections de plantes d'Allemagne qu'il a distribuées par souscription, et où mon maître M. Dunal avait eu la bonté de la chercher pour moi. La soudure des styles la distingue de *L. usitatissimum* et *humile,* auxquels elle ressemble par tous les autres points.

7. L. *monogynum,* Forst. Perenne; ramis corymbosis; floribus magnis, albis; stylis longe connatis.

Hab. in Nov. Zelandia, *Forster* in Hb. Hooker;—ibidem ad sinum dictum Bay of Islands, *Rich. Cunningham* in Herb. Hook.

L. *monogynum, Forst.* prod. n. 145. *Hook.* Bot. Mag. tab. 3574.

† † Stigmata linearia, stylo abrupte crassiora.

a. Flores rosei.

8. L. *decumbens,* Desf. Annuum; caulibus decumbentibus; corymbis paucifloris, densiusculis; sepalis e basi lata, membranaceo-marginata, in acumen crassum, herbaceum, acutum, subrecurvum contractis, conniventibus; petalis calyce duplo longioribus.

Hab. In Mauritania; in arvis prope Sbibam, regni Tunetani, *Desf.* prope Oran, *M. Munby* in Hb. Hook.; Mauritania, (absque loco proprio) *Vahl* in Hb. Gouan, nunc Hook.; in Sicilia, *Parlatore* in Hb. Hook.

L. *decumbens,* Desf. Fl. Atl. vol. i. p. 278, tab. 79. Reichenb. Icon. Fl. Germ. f. 5163, *b.*

9. L. *grandiflorum,* Desf. Annuum? multicaule, humile, foliosum; corymbis laxis; sepalis ovato-lanceolatis, aristato-acuminatis, basi latissime, apice angustissime membranaceo-marginatis; petalis calyce subtriplo longioribus.

Hab. in Mauritania; in arvis argillosis prope Mascar, *Desf.*; prope Oran, *M. Munby* in Hb. Hook.; etiam in summitate montis Braus, prope Nicæam, *Risso* ex Mutel. (an vere eadem?)

L. *grandiflorum,* Desf. Fl. Atl. vol. i. p. 278. tab. 78.

β. Flores cærulei.

10. L. *Narbonense,* L. Perenne, glabrum; caulibus elatis, virgatis; foliis lanceolato-linearibus, erectis, margine scabris; corymbis contractis; sepalis ovato-lanceolatis, cuspidatis, pergamaceis, nitentibus, bracteisque albo-marginatis.

Var. β? an sp. distincta?—foliis ovatis v. rarius lanceolatis, superioribus deflexis.—*L. reflexum,* Ait.

Hab. var. α in Gallia mediterranea, ex gr. prope Monspelium, ubi ipse legi; in Italia boreali a Nicea ad Carniam (Koch Syn.); in Hispania, in regni Granatensis regione montana et alpina inferiore, Sierra Bermeja, Sierra Tejeda, Sierra Nevada, Sierra San Geronimo alt. 1500–1600 ped., *Boiss.*

Var. β ex seminibus Ortegianis in hortum Kewensem adducta, loco natali incerto, sed verosimiliter Hispania.

L. *Narbonense,* L. sp. 398. Reich. Icon. Fl. Germ. f. 5161.—L. *scariosum,* Scheele in Flora s. Bot. Zeit. ann. 1843, p. 433. fide specim. Sieberiani ex alpib. Styriacis.—L. *reflexum,* Ait. Hort. Kew. vol. i. p. 387.

Obs. Le L. *reflexum,* que je réduis ici au rang de variété, est remarquable par la manière dont ses feuilles supérieures sont défléchies ou dirigées du haut vers le bas des rameaux. Elles sont d'ailleurs en général plus larges que celles de la forme commune du L. *Narbonense.* Mais la largeur des feuilles est tellement variable chez les Lins, qu'on peut à peine la regarder comme un signe certain de distinction spécifique. Dans ce cas, néanmoins, la question doit rester un peu douteuse, tant qu'on n'aura pour la

résoudre que deux échantillons desséchés et imparfaits. Le premier, qui fait autorité pour l'espèce, existe dans l'herbier de Banks conservé au British Muséum ; j' ai découvert le second, sans nom et sans localité, parmi les plantes de Smith, qui font partie des collections de la Société Linnéenne de Londres.

11. L. *nervosum*, Waldst. et Kit. Perenne; caulibus ascendentibus, erectis, virgatis, apice paniculato-divisis, inferne pilosis, cæterum glabris et lævibus; foliis in parte inferiore ramulorum emarcidis, parvis, squamæformibus, minute ciliatis, imbricatis; caulinis ovato-v. lineari-lanceolatis, aut lanceolato-linearibus, acutissime setaceo-cuspidatis, 5–3-nerviis, margine scabriusculis, glabris; pedicellis ad apices ramulorum paucis v. demum sub fructu laxe racemosis, infimis fructu multo longioribus; sepalis eximie cuspidatis, subimmarginatis, glanduloso-ciliatis, capsula ovato-acuta paulo longioribus; stylis inferne connatis.

Var. β, *glabrata*, caulibus inferne glaberrimis.

Hab. Stirps typica in Hungaria, *W. et Kit.*; ibid. e Bannatu, Hb. Hook.—Var. β in Rossia australi; Ucrania, *M. Biebst.* ex Ledeb.; ad Tanaim, *Henning, Goldbach,* ex Ledeb.; in Tauria, *Pallas* in Hb. Hook.; et in provinciis Caucasiis, ex Ledeb.

12. L. *virgultorum*, Boiss. et Heldr. *mst.* Annuum, glaberrimum; caule virgato, gracili, tereti, lævissimo, basi ima nudo, apice in ramos alternos elongatos, interdum fere a basi unilateraliter fructi- et floriferos diviso; foliis inferioribus emarcidis, haud imbricatis, caulinis lanceolato-linearibus, basi rotundatis, brevissime subpetiolatis, acutissime cuspidatis, margine leviter involuto asperis; pedicellis fructiferis patenti-erectis, sulcatis, capsula triplo longioribus; sepalis exterioribus lanceolatis, interioribusque ovatis, inferne albo-marginatis, eximie cuspidatis, glanduloso-ciliatis, capsulam ovato-globosam superantibus; stylis inferne connatis.

Hab. inter frutices montium Pamphyliæ, in fauce Tsimboukchan, ab *Heldreich* in Hb. Hook. a cl. Boiss. communicatum.

Species L. *nervoso* affinis; sed duratione, caule basi ima nudo, inflorescentia longius unilateraliter racemosa, floribus (ex sicco) minoribus, et capsula piso minore vel æquali absque dubio distincta.

Obs. J'étais occupé à corriger la dernière épreuve du tableau synoptique de la distribution des Linées, lorsque cette espèce est venue pour la première fois sous mes yeux. Trompé par un examen nécessairement rapide et superficiel, je la réunis dans ma pensée au L. *nervosum,* et j'introduisis à tort la Pamphylie parmi les localités de cette dernière plante. Il ne me reste aujourdhui qu'à espérer de l'indulgence des savants auteurs de la nouvelle espèce le pardon d'une erreur que je m'empresse de corriger.

14. L. *Aucheri,* nov. sp. Perenne ? ; glaberrimum ; caulibus subsimplicibus ; foliis alternis, approximatis, sessilibus, lanceolatis, acutis, 3–nerviis, subtus subglaucescentibus, margine scabris ; pedicellis solitariis ramulos breves corymbosos terminantibus, fructiferis stricte erectis ; calycibus L. *nervosi,* capsula ovata brevioribus.

HAB. in monte Dyulfeck, prov. Mazendaran secus mare Caspium ; *Aucher Eloy,* no. 4275.

Caules verosimiliter e basi communi perennante avulsi, pedales, stricti, teretes, obsolete-striati. Folia approximata, intermedia circiter pollicaria, 3 lin. lata ; internodiis subduplo longiora ; infima supremaque sensim breviora ; omnia basi obtusa, apice acutissima, margine scabra, subglauco-viridia, subtus pallidiora. Rami inflorescentiæ fructiferæ 3–4, vix 1–2-pollicares ; pedicellis circiter 3 lin. longis, calyci subæqualibus. Sepala inæqualia, exteriora vix 2½ lin. longa, omnia ovato-lanceolata, acutissime acuminata, margine scarioso, angusto, eglanduloso, serrulato. Styli ad basim liberi. Capsula ovata, acutiuscula, 3½ lin. longa.

Obs. Cette espèce est extrèmement voisine du L. *nervosum,* qui s'en distingue surtout par des capsules à peine égales au calice, au lieu de le dépasser.

Series ** Adenolinum, *Reichenb.* vide supra. vol. vi. p. 597.

15. L. *perenne,* L. Perenne v. subperenne (*Schiede*), multicaule ; foliis linearibus v. lineari-lanceolatis ; glandulis stipularibus 0 ; floribus racemoso-corymbosis, sæpius ante anthesin nutantibus ; sepalis ovatis, vix ac ne vix acuminatis, eglandu-

losis; stylis a basi liberis, staminibus longioribus aut brevioribus!; capsula acutiuscula, haud acuminata.

L. *perenne*, L. sp. 397.—Bentham Cat. pl. Langu. p. 96; Schiede in Linn. vol. i. p. 71.

Var. α *Anglicum*,—elatius, caulibus ascendenti-erectis, foliis angustis, floribus majusculis, demum racemosis; pedicellis fructiferis stricte erectis; sepalis 5-nerviis, interioribus obtusissimis, capsula subglobosa parum brevioribus.

— L. *Anglicum*, Mill. L. *perenne*, L. Herb. (specimen ex horto Upsaliensi); Smith, Engl. Bot. tab. 40; Koch.; Reichenb. Icon. Fl. Germ. fig. 5159.—L. *perenne* α *Anglicum*, Schiede, l. c.—L. *hispanicum*, Mill. Herb. (in collect. Banks.)

β *Sibiricum*,—humilius, caulibus numerosis, erectis; foliis latiuscule-linearibus; floribus magnis, sub anthesi corymbosis; sepalis interioribus obtusissimis; pedicellis fructiferis stricte erectis.

— *L. Sibiricum*, L.; DC.; Ledeb.

γ *Pyrenaicum*, humile, caulibus numerosis, adscendenti erectis, dense foliatis, foliis late linearibus; floribus ad apices caulium paucis; pedicellis fructiferis stricte erectis; sepalis nervosis, interioribus obtusis, capsula anguste ovata, majuscula, tertia v. fere dimidia parte brevioribus.

— L. *Pyrenaicum*, Pourr. fide Benth.—L. *montanum*, auct. quoad stirpem Pyrenaicam.

δ *montanum*, præcedenti conforme, nisi folia angustiora, et capsula et flores minores. (Hi variant staminibus stylo duplo brevioribus, aut duplo longioribus).

— L. *montanum*, Schleich. exsicc.; DC.; Gaudin. Fl. Helv. vol. ii. p. 459; Koch; Reichenb. Icon. Fl. Germ. fig. 5160, *b*; Boreau; Coss. et Germ, &c.—L. *punctatum*, Presl. Fl. Sic. p. 172? (ex specimine imperfecto, fructifero, a cl. Parlatore sub hoc nomine communicato).

— subvar. † *decumbens*,—caulibus decumbentibus, (in forma illa stamina sæpius stylis breviora, observante Hudsonio, qui illam ex eadem radice ac forma erecta, elatior, floribus majoribus et staminibus stylis longioribus instructa, crescentem se observasse asserit).

— L. *sylvestre, cæruleum, perenne, procumbens, flore et capitulo minore.* Ray, Syn. 362; Lin. Herb. (specimen ex horto Upsal. e seminibus stirpis Anglicæ).

— subvar. ††*Leonii,*—caulibus prostratis, ascendentibus, sepalis etiam interioribus acutiusculis (interdum in specimine eodem obtusatis!)

L. *montanum β*, Leonii, Hollandre Fl. de la Mos. fide cl. J. Gay. —*L. Leonii,* Schulz; Reichenb. l. c. fig. 5159.

— ε *alpinum,*—humile, caulibus adscendentibus, foliis angustissimis, in parte inferiore caulium confertissimis; corymbo laxo, subflexuoso, paucifloro.

L. *alpinum,* Jacq. Vindob. 229. — L. sp. 1672, et Herb.! (specimen e Scopolio accept.); Koch; Reichenb. l. c. 5160.—L. *montanum δ alpinum,* Schiede l. c.

— ζ *Lewisii*; omnia var. δ, sed pedicelli fructiferi, sigmoideo-flexuosi, erecto-patentes, et sepalorum nervi obsoleti. (Variat cæterum, in eodem specimine, stylis staminibus brevioribus, æqualibus v. longioribus).

L. *Lewisii,* Psrhh. Fl. vol. i. p. 210.—L. *perenne,* Nutt., Hook., Torr. et Gray, Fl. bor. Am. vol. i. p. 204.

— η *Austriacum,* caulibus adscendentibus, foliis linearibus, pellucido-punctatis, floribus quam in var. *a* minoribus, demum laxe racemosis; pedicellis fructiferis unilateraliter v. vage deflexis; sepalis interioribus obtusis, capsula subglobosa parum brevioribus.

L. *Austriacum,* L. sp. 399 et Herb.!—Jacq.; Koch; Reichenb. l. c. f. 5156.—L. *perenne β Austriacum,* Schied. l. c.—L. *barbulatum,* Lange; Reichenb. l. c. f. 5156 *β*. — L. *marginatum,* Reichenb. l. c. f. 5156 *γ*.—L. *squamulosum,* Rudolphi; Reich. l. c. f. 5156, *b*; Ledeb. Fl. Ross. vol. i. p. 426. ?

θ *Italicum,* omnia varietatis ζ, sed sepala omnia acutiuscula.

L. *Tommasinii,* Reichenb. l. c. f. 5156, *a.*—L. *perenne γ Italicum,* Schiede, l. c.

ι ?—*pallescens,* caulibus erectis; foliis linearibus, carnosulis; pedicellis fructiferis, stricte erectis; stylis brevissimis.

L. *pallescens,* Bunge in Ledeb. fl. Alt. vol. i. p. 438.

Hab. Stirps quam maxime polymorpha ab Europa australi et media per Siberiam totam ad Montes scopulosos Americæ borealis inter gradus 37° et 57° Lat. bor. et ad sinum Hudsonis usque extensa.

— var. α in sabulosis calcareis Angliæ comit. Cambridgeshire, Northamptonshire, Westmoreland, Suffolk et alibi passim; in Hibernia prope Monkstown, *Hook.* Brit. Fl.; Germaniæ ditio Rhenana inter Beuzheim et Darmstadt et prope Francofortium (Francf. am Mein), *Koch*; Rossia media, trans Mosquam, prope Kursk, Tambow; Volhynia, Rossiæ australis; Kiew, Podolia, Ucrania, prov. Azow ad Tanaim, *Ledeb. Fl. Ross.*

— var. β per Siberiam fere totam et in America bor.; Sibiria Uralensis, prope Yekaterineberg, *Ledeb.*; Sib. Altaica, *Ledeb.* in Hb. Hook.; in montes Tarbagataï et in subalpinis ad rivulum Tscheharak,—Assu, *Kar.* et *Kir*. ex Ledeb.; ad Jeniseam prope Krasnoyarsk, Mangesea et alibi; Siberia Baicalensis et orientalis prope Olekminsk, Wilnisk, et Irkutzk, *Lebeb.* Fl. Ross.; Davuria, *Pallas* in Hb. Hook.; Kamtschatka, *Gmelin*; *Redowski*; *ex Chamisso.*

Var. γ in Pyrenæeis, ex gr. in valle d'Eynes dicta, *Benth.* in Hb. Hook.; in monte Port de Paillières Pyr. cent.; *Endress.* ann. 1830 in herb. Union. it.

Var. δ in alpibus humilioribus v. pascuis planitierum Europæ centralis; Gallia media, *Boreau*; ager Parisiensis, *Coss et Germ.*; Alpes Helveticæ, *Schleich, W. J. Hook.* (ex Herb. Hook.), et Juranæ, *Gaud.*; ibi in ditione Bex, loco dicto Passage de l'écluse, *Gay,* in Hb. Hook. (Forma inter var γ et δ fere media); in pascuis et pratis siccis planitierum Germaniæ prope München et Regensburg, *Koch* Syn. Fl. Germ. ed. 2 nda; Alpes Apuanæ, *Bertoloni* in Hb. Hook.

Subvar. † in agro Cantabrigiensi, *Ray*. . . . . et verosimiliter ubique cum forma typica

Subvar. †† in Gallia bor. occident. prope Ouville (Moselle), *J. Gay,* in Hb. Hook.

Var. ε in alpibus Germaniæ, Helvetiæ occident, et Pyrenæorum or.; Alpes Austriacæ, ex gr. Alpe Schneeberg, *Jacqu.* in Hb. Banks; Helvetia, *Koch* Syn.; Pyrenæi, *Benth.* in Herb. Lindl.; Costabona, Raze, et Font-de-Comps, nec alibi, ex *Lapeyr.*

Var. ζ in America bor. occid. a mare arctico secus montes Scopulosos, usque ad ditionem Arkansas; in sterilibus montium Scopulosorum usque ad littora maris Pacifici, *Dougl.* in Hb. Hook. et Lindl.; ibi in ditione Wallah-Wallah, *Tolmie* in Hb. Hook.; secus flumen Saskatchawan, *Richards.*, in Hb .Hook.; ad sinum Hudsonii, *Burke* in Hb. Hook.; in ditione Arkansas, *Nuttall* ex Torr. et Gray.

Var. η in Europa australi-orientali; Austria in arenosis ad Belvedere Viennæ, *Dr. T. Fendler* in Hb. Hook.; Carniolia, *Herb. Hook.*; Moravia et Bohemia, *Koch* Syn.; Macedonia, *Griseb.* Spicil. Fl. Rum.; Mons Athos, *Aucher*, no. 836 in Hb. Hook.; Rossia australis, Podolia, *Besser*; Ucrania; gub. Cherson ad Tanaim; prope Astrachan; Tauria et prov. Caucasicæ ad flumen Terek; Somchetia, Kachetia, Mingrelia, Imeretia, *Ledeb.* Fl. Ross. (vidi specim. e Rossia australi absque loco proprio ex-Herb. Petropol. communic. sub nom. L. *squamulosi*); Caucasus territor. Elizabethpol et mons Talusch, *Mey.* ex Ledeb.; (hæc forma, quæ L. *squamulosum*, Ledeb. constituit ad var. ε valde accedit); Mesopotamia, *Aucher*, no. 825 in Hb. Hook.

Var. θ in Italia prope Panormum et in insula Cherso; *Bartling* ex Schied.; prope Tergestum, *Tommas.*; *Benth.* in Hb. Hook.

Var. ι Sibiria Altaica, *Ledeb.* in Hb. Hook.; desertum Soongaro-Kirghisicum inter Usumbulak et Gorkoï-piket, *Karelin et Kiril.* ex Ledeb.

Obs. Quatre espèces Linnéennes, adoptées par la plûpart des auteurs et subdivisées à l'infini par quelques autres, viennent, comme on voit, se fondre dans le seul L. *perenne.* J'avoue qu'avant d'adopter cette conclusion, dont l'idée première appartient en partie à Mr. Bentham, et en entier à M. Schiede, j'ai passé et repassé mille fois devant mes yeux une masse d'échantillons de ces diverses formes. J'ai vu des différences entre leurs points extrèmes, mais je laisse à d'autres, plus clairvoyants ou plus heureux que moi, le soin de fixer leurs limites, s'il en existe de certaines. La variation la plus remarquable peut-être, celle de la longueur relative des étamines et des styles, s'observe chez presque toutes les formes de la plante, et mérite toute l'attention des botanistes, parce qu'elle cache sans doute un petit mystère dont l'observation de la plante vivante peut dévoiler le secret. Les fleurs à styles courts murissent leurs fruits, et paraissent avoir du pollen, comme celles à styles alongés. Mais ce caractère n'est-il pas lié à quelques particularités physiologiques des organes floraux? N'influe-t-il pas sur le mode de fécondation? Se transmet-il de la plante à celles qui proviennent de ses graines? Voilà des questions que je ne puis résoudre, ni au mois d'Octobre, ni dans les environs de Kew où ne croit aucune espèce de Lin, mais que je recommande à l'attention des botanistes, qui pourraient avoir à leur portée, ou le L. *perenne*, ou le L. *salsoides*, chez lesquels la même variation parait avoir lieu.

Species habitu ad L. *mysorensem* accedens sed glandulis sepala marginantibus, aliisque notis ab illa distincta.

?16. L. *Stelleroides*, nov. sp. Glaberrimum; caule (e radice annua?) simplici, recto, superne conferte-ramuloso; ramulis strictis, erectis, in racemos subsimplices, paucifloros abeuntibus; foliis ericoïdeis, lævibus; glandulis stipularibus 0; pedicellis calyce triplo et ultra longioribus, erectis; sepalis ovatis, margine glandulis nigris hinc inde obsitis; capsula ovata, acuminata, acuta brevioribus.

HAB. in China, *Hb. Hook.*, verosim. e collectione cl. Fortune.

Radix simplex, brevis, hinc inde fibrillosa, verosimil. annua. Caulis ascendens, rectus, sublignosus, teres, semipedalis, crassitudine pennæ passerinæ, lævis, cicatricibus foliorum delapsorum punctiformibus inferne notatus; sub apice (casu quodam abscisso) conferte ramulosus. Folia linearia, patentia, 3–4 lin. longa, $\frac{1}{4}$ v. $\frac{1}{2}$ lin. lata, plana, interdum subtorta, glaucescentia, lævissima. Flores eis L. *maritimi* paulo minores; sepala ovata, viridia, enervia, 3 exteriora acuta, interiora obtusata. Petala non rite visa, sed ex sicco, ut videtur, cyanea. Capsula grano piperis subæqualia, ovata, eximie acuta, valvarum semihiantium apicibus diu connexis; styli ima basi concreti; stigmata capitellata.

Subgen. II. *Cliococca*. Vide supra vol. vi. p. 597.

17. L. *selaginoides*, Lamk. Perenne, glabrum; caulibus e caudice denudato v. pluribus, ascendentibus, simplicibus v. sæpius a basi ramuliferis et apice corymboso-divisis, 3–10 pollicaribus; foliis alternis, confertis, incurvo-imbricatis, subulatis, mucro-

nato-piliferis; floribus ramulos foliosos cymæ pauci-divisæ terminantibus, subsessilibus; petalis calyce brevioribus (albidis v. rufescentibus, interdum apice roseis, *A. S. Hil.*), in unguem attenuatis; capsula obovato-globosa, apice obtusa (v. umbilicata, *A. S. Hil.*), complete 10-loculari, piso parvo æquali v. parum minore.

L. *selaginoides*, Lamk. dict. vol. iii. p. 504. A. S. Hil. Fl. Bras. merid. vol. i. p. 131.

Var. β? an sp. distincta?—*Chilensis*: caudice subterraneo, tortuoso, in caudiculos plures graciles (subterraneos) diviso; ramulis foliatis 1–3 pollicaribus; capsula globosa, grano piperis subæquali.

L. *selaginoides*, Schiede in Lin. vol. i. p. 67. quoad stirpem Chilensem; Cl. Gay, Fl. Chil. vol i. p. 464, vix Lamk.

Hab. Stirps typica in Brasiliæ prov. Cisplatina, prope Montevideo, *Commers.*; *A. S. Hil.*; *Tweedie* in Hb. Hook.; *Sellow*. ibid. ex Hb. Berolin. (specimina pro specie procera).

Var. β. in regno Chilensi prope Valvidia, *Bridges*, no. 669 in Hb. Hook.

Obs. Je regrette beaucoup de n'avoir pas à ma portée des échantillons en fleur des deux formes que je laisse réunies sous le nom de L. *selaginoides*. Les différences qu'elles présentent au coup d'œil et dans la grandeur de leur fruit me font présumer qu'elles seront un jour définies comme deux espèces. Il n'est pas impossible même que la variété β se rapporte à l'espèce suivante, et je l'aurais peut-être considerée comme telle, si M. Claud. Gay ne décrivait les pétales de la plante Chilienne comme blancs on légèrement roses, tandis qu'ils sont d'un rouge pourpre chez celle de M. Babington.

19. L. *Babingtonii*, Planch. Perenne, glabrum, humile; caulibus e caudice lignoso pluribus, parum ramosis; foliis confertis, incurvo-imbricatis, subulatis, mucronato-piliferis; floribus ad apices ramulorum subsessilibus; petalis calyce duplo brevioribus, purpureis, oblongis, vix basi attenuatis, haud unguiculatis; capsula subglobosa, truncata (in parte superiore fusco-purpurea), calyce breviore, complete 10-loculari.

Hab. In horto Cantabrigiensi e seminibus (Australasicis ex auct. quod mihi valde dubium) educata.

Cliococca tenuifolia, Babingt. in Trans. Soc. Lin. Lond. vol. xix. p. 34. tab. 3.

Obs. Malgrè le peu de disposition que je me sens à faire des espèces sur des plantes que je n'ai pas vues, il me parait clair que la plante figurée par M. Babington est distincte du L. *selaginoides,* par ses pétales plus courts, non attenués ni onguiculés à la base, pourpres au lieu d'être blancs ou roussâtres ou rarement roses à leur sommet, et par les denticules interposés à leurs étamines, qui sont semi-oblongs, au lieu que ceux du L. *selaginoides* sont décrits par M. Aug. de St. Hilaire comme *angustissimi.*

Subgen. III. LINASTRUM.

Linopsis et Cathartolini, sp. Reichenb.

(Vide supra vol. vi. p. 597.)

Ser. * DICHROLINUM, vide supra ibid.

20. L. *tenuifolium,* L. Perenne; caule primario abbreviato, secundariis virgatis, simplicibus, (rarissime furcatis,) sterilibus puberulis; foliis subulatis, pungentibus, glabris, margine-ciliatis; corolla (ex cl. Benth.) subrotata, fundo purpureo; petalis aspero lineis purpureis striatis; sepalis ovatis, acutissime cuspidatis, roseo-albis, capsula ovato-acuminata longioribus.

Variat foliis impunctatis v. (in specim. Aucheriano no. 833.) punctis impressis sparsis.

L. *tenuifolium,* L. sp. (exclus. β. γ. ε. et verosim. synonym. plerisque) et Hb. (specimen Monspeliense); Reichenb. Icon. Fl. Germ. tab. 5165.

HAB. in Europa media et australi, et in Asia minore; ager Parisiensis, circa Fontainebleau, *Cl. J. Gay* in Hb. Hook.; Gallia media, in ditionibus Cher, Nièvre, Loiret (etc.) ubi non rara, *Boreau,* Fl. du Cent.; Gallia mediterr. prope Avenionem, *Requien* in Hb. Hook.; prope Monspelium, *Herb. Linn.,* ubi ipse post alios legi; Helvetia occidentalis, in ericetis et locis aridis, vix in montes adscendens, *Gaud.* Fl. Helv.; Valesia inferior, *Gaud.*; Germania, in provinciis mediis et australibus, sed non ubique, *Koch* Syn.; Vindobonæ, prope Dombach, *Treviranus* in Hb. Hook.; Italia prope Spalato, *R. C. Alexander* in Hb. Hook.; Rossia australis, Podolia, *Besser*; Tauria, *M. Biebst., Pallas* in

Hb. Hook.; Provincia Caucas, *Ledeb.*: Rossia austr., prope Odessam, Auch. no. 833; Syria prope Antab, *Montbret* in Hb. Hook.

Semisepta capsulæ versus basim pilis albis barbata, cæterum glabra. Styli in omnibus specimin., quos vidi, staminibus longiores.

21. L. *salsoloides*, DC. Fruticulosum, humile; ramis sterilibus vix pilosulis; foliis subulatis, inferioribus abbreviatis et supra bisulcis, glabris, aspero-ciliatis; corolla (ex cl. Benth.) campanulata, fundo intus purpureo; sepalis ovatis, acutissime cuspidatis, capsula longioribus (fide Reichenb. et Boiss.)

Variat, e speciminibus Monspessulanis, stylis staminibus conspicue longioribus v. eisdem brevioribus!; petalis nunc circiter pollicaribus, nunc vix ultra 8 lin. longis. Specimina e ditione Suziana corollam adhuc minorem, cum stylis staminibus longioribus, exhibent.

HAB. in Gallia media et mediterranea, et in Italia. Gallia media, in ditione Cher passim rara, *Saul, de Lambertye*, ex *Boreau Fl. du Cent.*; Gall. mediterr., prope Monspelium, *Benth.* in Hb. Hook.; ibidem ipse legi; verosimiliter pluribus locis in Gall. mediterr. occurrit; ditio Pedemontana, Suza, cl. *Woods* in Hb. Hook.

L. *salsoloides*, DC., Prod. vol. i. p. 427 (ex loco natali). Vix Lamk. Dict. vol. iv. p. 521? Reichenb. Icon. Fl. Germ. tab. 5165, C.

Species sequenti proxima, sed caules secundarii breviores fere a basi ramulosi, nec in altitudinem semipedalem et ultra surgentes, steriles fere plane glabrati, et folia, præter scabritiem marginum, glabra. Illa cæterum in parte inferiore caulium fertilium v. in ramulis propriis sterilibus, haud axillaribus, abbreviata et, more *Sedi rupestris*, conferta, nec in fasciculos axillares, ut solent illa L. *suffruticosi*, collecta. Specimina florida plura sub oculis habeo, sed fructus mihi desideratur.

Obs. En conservant à la plante que je viens de décrire le nom de L. *salsoloides*, sous lequel elle est généralement connue dans les herbiers, j'ai du substituer De Candolle à Lamarck, comme autorité pour l'espèce. Il s'agit, en effet, d'une plante de la France méditerranéene à laquelle De Candolle a peut-être appliqué

à faux la description que Lamarck a donnée de son L. *salsoloides* d'Espagne; car, chez la plante de Montpellier dont M. Reichenbach a publié une figure (Icon. Flor. Germ. t. 5165, *c.*), les sépales sont presque deux fois plus longs que le fruit; tandis qu'ils égalent à peine cet organe, chez la plante de Lamarck. Si donc, comme il est à présumer, cette dernière est distincte de l'espèce de France, c'est elle qui devra retenir le nom de L. *salsoloides*, et l'on pourrait dans ce cas appliquer au L. *salsoloides* des flores françaises le nom de L. *Candollei* ou de L. *commutatum*. En attendant que la vue d'échantillons, authentiques permette à quelque botaniste de décider définitivement cette question, je joins ici, comme pièce du procès, la diagnose et la description que Lamarck donne de sa plante.

" L. *salsoloides*.—L. caulibus basi fruticulosis, imbricato-foliosis, " superne nudiusculis, filiformibus; foliis subulatis triquetris.

" β idem? foliis longioribus, minus strictis.

" *Linum sylvestre crispum Hispanicum, parvo flore albo*. Barrel. " Icon. 795." (Iconem laudatam ipse non vidi; *J. E. Planch.*)

" Radix lignosa, sat crassa, basi fibrosa, ad collum divisa, caules " plures agens, alios steriles, alios floriferos, fruticulosos, parce ra- " mosos et inferne foliosos. Caules fertiles gracillimi, filiformes, " glabri, nudiusculi, foliis raris præditi, apice paniculati, 7–8 poll. " longi; steriles multo breviores. Folia parva, brevia, lineari-subu- " lata, carinata, trigona, recta, viridia, *glabra* et quasi vermiculata, " sparsa; inferiores et illa ramorum sterilium subimbricata, et " tantum 1 lin. longa. Capsulæ parvæ (*fort petites*, Lamk. " quod tamen vix pro *minutæ* intelligitur), globulosæ, acuminatæ, " calyci insidentes, *cujus foliola ovata acuminata eas vix æquant.*" Lamk. Encycl. vol. iii. p. 520, ex Gallico versus. "Crescit in " Hispania." Lamk. vid. sicc.

22. L *suffruticosum*, L. Fruticulosum; ramis sterilibus dense lutescenti-pubescentibus; foliis subulatis, ramulorum axillarium sterilium brevibus, confertis, crassis, supra bisulcis, undique aspero-papillosis v. cinereo-pubescentibus; petalis cuneato-obovatis, in acumen breve abruptè angustatis; sepalis ovatis, acutissime cuspidatis, capsula ovata acuta brevioribus.

Var. β *Jacquini* humilior, omni parte gracilior: an sp. distincta?

Hab. in Hispaniæ provinciis fere omnibus; Navarra, *Dufour* ex Boiss.; Arragonia, *Asso* ex Boiss.; ditio Valentina, *Cavan.*, *Ruiz et Pav.* in Hb. Mus. Brit.; ditio Granatensis, in dumosis regionis calidæ superioris et montanæ vulgatissimum, inter Malaga et Alhaurin, Sierra Bermeja, Sierra Tejeda, Sierra Nevada, usque ad San Geronimo, alt. 800′—5000′; *Boiss.* Voy.; in montib. calcar. prope Chiva, Callada-Royo, etc. *Willkomm.* in Hb. Hook.

Var. β in Austria, *Jacq.* in Hb. Banks. nunc Mus. Brit. (absque loco proprio).

L. *suffruticosum*, L. sp. p. 400. quoad syn. et locum natalem. (Specim. in Herb. summi magistri exstat nomine L. *tenuifolii* β, ejus manu inscriptum.)—Cavan. Icon. ii. tab. 108. (icon non mala).—Boiss. Voy. Bot. en Esp. p. 108.

Descriptio stirpis typicæ. Caules plures ascendentes, pluries furcato-ramosi, v. hinc inde ramulos alternos, confertos emittentes, tri- sex-pollicares et ultra, crassitie pennæ corvinæ v. anserinæ, denudati, epidermide rimulosa v. in squamas delitescente, sæpius flavescente. Folia ramorum fertilium subulata, 5–6 lin. longa, breviter mucronata, marginibus et nervo medio interdum parum incrassatis, his sæpius involutis, facie utraque papillis raris asperata, v. pilis brevibus crispulis raris v. densis cinerea, rarius subglabra; ramulorum sterilium abbreviatorum 1–3 lin. longa, subulato-gladiata, nervo unico utrinque in carinam elevato, marginibus crassis involutis, superficie tota pilis brevibus, papilliformibus, cinereo-flavidis asperata, v. pube cinerea tecta. Folia floralia linearia, subulata, erecto-patentia. Pedicelli pars nuda semper calyce brevior, nunc brevissima. Calyx et corolla ab eis L. *salsoloidis*, DC. in sicco non distinguenda. Petala alba intus, præsertim versus unguem, dilute violacea, extus flavescentia v. interdum brunnea (ex Boiss.) eis L. *angustifolii* majora. Capsulæ, in specimine Boissieriano, parvæ, grano *Piperis nigri* vix æquales, (sed illæ calyce minore quam solito suffultæ sunt, et ex speciminibus aliis, imprimis quodam Jacquiniano in Hb. Banks. asservato, capsulas sæpius majores esse censeo,) ovatæ, acutæ, calyce fere tertia parte breviores, (in specimine Jacquiniano ei subæquales). Stylos in speciminibus Boisserianis et Willkommianis sepala æquantes et staminibus conspicue breviores observavi; sed hi variant, in specie affini L. *salsoloide*, DC., staminibus longiores, aut vice versa.

Descriptio var. β.—Caules ex uno fere subterraneo, abbreviato plures, tortuoso-adscendentes, graciles, superne vage ramuliferi, denudati. Ramuli foliati, steriles et fertiles, sicut folia omnia, pube brevi scabridi. Folia illis L. *salsoloidis*, DC., conformia, infima cujusve ramuli conferta, brevia, recurva. Inflorescentia et flores in sicco nullum character distinctionis ab affinibus præbent.

Obs. Specimen alterum Jacquinianum in Hb. Mus. Britannici asservatum, cui nulla loci natalis notitia affixa est, cum supradescripto foliis et inflorescentia plane convenit; capsularum reliquias exhibet, quantum ex eorum statu imperfectissimo dijudicare licet, calyci subæquales; quo charactere, et pube foliorum superficiem totam induente, specimen utrumque certe L. *suffruticoso* propius accedit quam L. *salsoloidi*, DC., aut L. *tenuifolio*, L. L. *suffruticosum*, Reich. Icon. fig. 6165, *b.* est planta recognescenda. Varietatem β. L. *suffruticosi* facie refert, sed ex verbis aucto- "ris foliis læviusculis, margine ciliato-scabris" diversa videtur.

23. L. *Ortegæ*, Planch. Fruticulosum; ramulis gracilibus pluries furcatis; foliis parvis, brevibus, triangulari-subulatis, acutis, præter cilia brevissima, glabris, more *Lycopodii* v. *Andromedæ tetragonæ*, imbricatis; inflorescentia L. *angustifolii* et L. *suffruticosi*.

Hab. in Hispania. *Ortega* in Hb. Banks., nunc Mus. Brit.

L. *suffruticosum*, Ortega mst. non L. Species insignis, *Andromedæ tetragonæ* faciem præ se ferens, nisi caules elatiores et laxius divisi: hi teretes sunt, crassitie pennæ corvinæ, inferne denudati, et epidermide lævi, nitida vestiti, superne in ramulos multos divisi. Folia 3–4?-fariam imbricata, triangulari-subulata, 2–2½ lin. longa, leviter incurva, dorso carinata, facie concaviuscula, annotina, in sicco pallide viridia, vetustiora emarcida, straminea. Flores et fructus in specimine semidestructi; sed stirps fere absque dubio huc recte locata.

Ser. ** CATHARTOLINUM, Griseb. Spicil. vol. i. p. 118.

24. L. *Catharticum.* Foliis inferioribus obovatis, intermediis oblongis v. elliptico lanceolatis; pedicellis sub anthesi et antea nutantibus, fructiferis erectis, capsula multoties longioribus, septis semiseptisque pilis longis albis barbatis.

Occurrit foliis alternis ex cl. Boreau, quod monstrum potius quam varietas.

HAB. ab Islandia et Lapponia per Europam totam in Asiam Minorem, Africam borealem et insulas Canarienses, et Maderam. —Islandia, *Hb. Hook.*; Lapponia, *Wahlenb.*; Suecia, Norwegia, Dania, Rossia, Scotia, et Anglia fere ubique; Hollandia, Belgium, Germania. Helvetia, in pascuis siccioribus, etiam subalpinis, ultra terminum Abietis ubique; nec St. Gothardi pascua alpina inferiora fugit, *Wahlenb.* Helv.; Albania bor., Macedonia, Thracia, ibi in herbosis alpinis Mont. Kobelitza alt. 4670′–7000′ (substrat. calc.) *Griseb.* Spic. Fl. Rum.; Græcia; peninsula Iberica; Insulæ Canarienses, *Webb*; Madera, *Lowe* in Hb. Hook.; Ægyptus; Asia Minor, *Aucher,* no. 835; prov. Caucasicæ, *Ledeb.* Fl. Ross.

Ser. ***Linopsis.—*Linopsidis et Cathartolini* sp. Reichenb. (*Vide supra* vol. vi. p. 597, 598.)

25. L. *multicaule,* Hook. Humile; caulibus pluribus, gracilibus, supra bis v. rarius simpliciter corymboso-divisis, angulato-sulcatis; foliis crebris, erecto-imbricatis, lineari subulatis, aristatis, rigidis, margine aculeolato-ciliatis, summorum nervo unico subtus basi tumido; floralibus squarrosis, inferne albo-marginatis, florem subsessilem fulcrantibus; floribus parvis; sepalis ovato-acuminatis, aristatis, capsulam ovatam obtusam superantibus.

HAB. in ditione Texas Amer. sept. prope S. Felipe, *Drummond* in Hb. Hook.

L. *multicaule,* Hook. in Torr. et Gray. Fl. of N. Am. suppl. p. 678.

Caules e radice simplici 4–5, centrali mox in ramulos ascendentes diviso, v. omnes ex uno crassiusculo lignescente connati, inferne interdum cicatricibus foliorum notati, et ibi teretes, cæterum fere per longitudinem totam sulcato-angulati, angulis puberulo-asperulis. Flores etiam juniores erecti. Pedicelli fructiferi elongati, 2–3 lin. longi, capsulæ longitudinem 2–3-plo superantes. Styli ad medium (?) connati.

26. L. *hudsonioides*, Planch. Humile; caulibus plurimis, apice simpliciter corymboso-divisis, angulato-sulcatis; foliis imbricato-erectis, lineari-subulatis, cristatis, glabris, margine lævibus, summis subsquarrosis, anguste-marginatis, pedicellis floridis duplo brevioribus; floribus in apice ramulorum solitariis; stylis longe supra medium connatis; sepalis ovatis, acuminatis, aristatis, capsula ovata acuta 10-loculari longioribus.

Hab. in ditione Texas, Americæ septent. inter Bejar et El Rio de la Trinidad, *Berlandier*, Maio 1828, in Hb. Hook.

Species præcedenti similis, sed absque dubio distincta. Planta tota 4–7-pollicaris. Radix simplex, descendens, verosimiliter perennans. Caules e collo plures; centrali robustiore e basi ramulos crebros, conferte alternos, ascendentes emittente; lateralibus simplicibus v. rarius a basi divisis, nunc cauli centrali conformes, et, cum eo, in cæspitem densum congestis; omnibus apice tantum in ramulos 3–4, breves, flore unico terminatos divisi, inferne teretes et minute puberuli, superne sulcato-angulati, angulis pube brevi subpulveracea scabridis. Folia erecto-adpressa, internodiis longiora, lineari-subulata, 3–4 lin. longa, ½ lin. lata, sæpius semi-torta, marginibus paululum incrassatis, lævibus, arista terminali pungente, consistentia rigida. Nervus unicus in foliis summis basi subtus leviter tumidus (nec adeo ut in L. *multicaule*). Ramuli floriferi in specimine ante anthesin nutantes (an character constans?), alabastris junioribus inter folia summa semi-occultis, florum pedicello contra 5–6 lin. longo, profunde sulcato, angulis puberulis, apice cum flore articulato. Sepala ovata, 2–½ lin. longa, marginibus late membranaceis, apice denticulatis, eglandulosis, dorso viridi-fulvo, nervo unico centrali et duobus lateralibus apice tantum conspicuis instructo, seta apicali ½ lin. longa, rigida. Petala rite non vidi. Styli apice tantum liberi. Stigmata capitata. Capsula plane L. *multicaulis*, sed fere duplo major, nempe *Piso* minori subæqualis.

(*To be continued.*)

On some new MUSCI, *collected by* PROFESSOR W. JAMESON *on Pichincha.* BY the late THOMAS TAYLOR, M.D.

Professor Jameson continues to transmit to Europe his discoveries in the Quitenian Andes. A tropical sun cannot exhaust his zeal, or enervate his exertions; and his success is measured not more by the multitude than the distinctness of the species he has collected. It will readily be perceived that the following species yield not in interest to any of those formerly described. The entire must form an important element in ascertaining, at a future period, the just relations of muscological life.

PHASCUM, *L.*

1. P. *Jamesoni,* Tayl. Hermaphroditum. Caule subsimplici, erecto; foliis congestis, rigidis, erectiusculis, summis subpatentibus, ex oblonga amplexante basi subulato-setaceis, margine planis, serrulatis; setis subflexuosis, exsertis; capsula erecta, sphærica, apice obtuse apiculata, siccitate corrugata.

On Pichincha. *Prof. W. Jameson.* May, 1847.

Plants loosely aggregate, 2–3 lines high, dark olive green. Shoots attenuated below, bushy above. Leaves half as long as the shoots, their nerve percurrent, their points sometimes colourless and transparent. Fruit terminal, but by the prolongation of the new shoot at length appearing lateral. Flowers hermaphrodite; anthers oblong, pellucid, pistilla opaque; *paraphyses* numerous. Capsule round, yet slightly produced at the base, as well as at the *apex,* the sides very thin, wrinkled when dry. Pedicel 2–3 times as long as the capsule. Seeds rather large, dark reddish-brown, their coats pellucid. The habit of a *Bartramia,* the rigid leaves, the great diameter of the capsule, and the hermaphrodite flowers, render this species remarkable in the genus.

TORTULA, *Hedw.*

1. T. *campylocarpa,* Tayl. Caule laxe cæspitoso, subramoso; foliis laxe imbricatis, patenti-recurvis, ex lata ovata basi lineari-

subulatis, integerrimis, margine recurvis, summis siccitate convolutis, perichætialibus majoribus, erectis, adpressis; seta elongata; capsula cylindrica, hinc curvato-inclinata; operculo longirostro.

On Pichincha. *Prof. W. Jameson.* Feb., 1847.

Stems about one inch high; shoots brownish, except at the very summits, where they are yellowish-green. Inferior leaves shorter and more distant, the upper larger and more recurved, but the highest or perichætial are erect, and closely invest the base of the pedicel. Peristome of sixteen pairs of filiform teeth. Pedicels a fine reddish-brown. Calyptra dimidiate. No male flowers observed. The curved capsules and slender points to the more subulate leaves separate this from *Barbula fallax,* Hedw.; whilst the more considerable perichætia, and wider bases of the leaves keep it distinct from *Barbula vinealis,* Brid.

DIDYMODON, *Hedw.*

1. D. *calyptratus,* Tayl. Caule cæspitoso, erecto, subsimplici; foliis laxe imbricatis, erecto-patentibus, incurvis, linearibus, acutis, siccitate tortis, integerrimis, basi margine inflexis; capsula tenella, cylindracea, operculo longirostro; calyptra lineari quam capsula duplo longiori, torta.

On Pichincha. *Prof. W. Jameson.* Dec., 1846.

Tufts scarcely one inch high, the younger parts glaucous-green. Capsule longitudinally wrinkled when dry, ovato-cylindrical, subplicate at the base. Columella shorter than the capsule. Calyptra lineari-subulate, spirally twisted. Peristome of sixteen short, filiform teeth, each marked with an opaque line in the axis. No male flowers observed. The shoots have the habit of *Weissia tenuirostris, Hook.* et *Tayl.,* (which some suppose to be a *Didymodon,*) but it is readily distinguished by its remarkably long and spirally twisted calyptra.

POLYTRICHUM, *L.*

1. P. *Jamesoni,* Tayl. Caule laxe cæspitoso, simplici, erecto, breviori; foliis erecto-patentibus, ex lata amplexante basi linearibus, acuminatis, denticulatis, nervo dilatato; capsula lævi,

lineari, angusta, basi obconice apophysata, quadrilata; operculo hemispherico, rostro elongato conico, compresso.

On Pichincha. *Prof. W. Jameson.* Dec., 1846.

Shoots brownish, naked beneath, the leafy part about four lines long. Leaves when dry remaining flattish, not twisted. Pedicels two inches high. Peristome short, of sixteen reddish, erect, sometimes bifid teeth. Capsule erect, very slightly curved, somewhat rough, with projecting cellules. The figure of the capsule may be compared with that of *P. angustatum*, Hook.; but the stiff, straight leaves, destitute of undulations, are sufficient differences. No male flowers were observed.

BARTRAMIA, *Hedw.*

1. B. *incana*, Tayl. Caule cæspitoso, dichotomo; surculis abbreviatis, erectis; foliis arcte imbricatis, erectis, tam madore quam siccitate strictis, triangulari-lanceolatis, acuminatis, subserrulatis, apice incanis; setis axillaribus caulem superantibus; capsula erecta, oblongo-rotundata, striata.

On Pichincha. *Prof. W. Jameson.* Dec., 1846.

Stems about one inch high; shoots dusky olive, the very youngest only green; branches slightly divaricating. Leaves straight, rigid, their position little altered by moisture, their points diaphanous and colourless. Capsule twice as wide as the shoots. Outer peristome of sixteen truncate teeth, the inner appeared to be thinner and yellower, but traces only were visible on the specimens. The hoary leaves, whose margins are not reflexed, and the greater and more erect capsules, distinguish this from B. *stricta*, Schwaeg. No male flowers were observed.

FUNARIA, *Schreb.*

1. F. *Jamesoni*, Tayl. Caule laxe cæspitoso, erecto, simplici, basi nudiusculo; foliis in rosulam congestis, ex angusta basi rotundato-oblongis, obtusissimis, apiculatis, evanidinerviis, subintegerrimis; capsula inclinata, elongate pyriformi, lævi, apophysi obconica longitudinaliter rugosa; operculo plano.

On Pichincha. *Prof. W. Jameson.* Dec., 1846.

Stems scarcely two lines long. Leaves pale green, their nerve rather brown, rounded at the top, yet having a short *apiculus*, to which the nerve does not reach. Lid destitute of a *mucro*. *Outer* peristome of sixteen oblique, trabeculate, opaque teeth, *inner* of as many opposite *laciniæ*, which are pale brown, pellucid, and largely cellulose. The present differs from F. *Fontanesii*, Schw., by the very obtuse, sometimes rotundate tops of the leaves, by the plane lid and the more elongated capsule, whose seed-containing cavity occupies only one-third of the fruit; the *vaginula*, too, is longer. No male flowers were observed.

FISSIDENS, *Hedw.*

1. F. *turbinatus*, Tayl. Caule laxius cæspitoso, erecto, simplici, apice subincurvo; foliis erectiusculis, distichis, deorsum heteromallis, elongate lingulatis, integerrimis; seta terminali; capsula erectiuscula, elongato-turbinata, basi strumosa; operculo conico, acuminato-rostrato.

On Pichincha. *Prof. W. Jameson.* Dec., 1846.

Shoots pale green, scarcely one inch long. Leaves from a somewhat broader base, linear, obtuse. Capsule very slightly incurved, the mouth wide. The strumose base of the capsule and the entire and elongated heteromallous leaves separate the present abundantly from F. *adiantoides*, Hedw. No male flowers were observed.

CYMBARIA, *Tayl.* novum genus.

Ch. Gen. Flores dioici; fœminei aggregati, radicales. Peristomium simplex; dentes sedecim declinati, late lanceolati, rimis axalibus pertusi. Capsula subæqualis, striata; annulo persistente. Calyptra dimidiata?

Habitus *Fissidentis*. Capsula *Weissiæ*. Peristomium *Sclerodontis*. Sedes terrestris. Patria tropica. Vita perennis.

1. C. *Jamesoni*, Tayl. In monte Pichincha. *Prof. W. Jameson*, Maio, 1847.

Caules fere unciales, erecti, laxe cæspitosi, basi simplices, subnudi, tomentosi, supra vage ramosi. Surculi complanati.

Folia læte viridia, imbricata, erecto-patentia, disticha, cymbiformia, seu oblongo-ovata acuta apice incurva, complicato-carinata, denticulata, nervo valido, pellucido, excurrente, infra subdenticulato, papillosa, infima lanceolato-subulata, cauli appressa, minora; perichætialia caulinis dissimilia, epapillosa, concava, arcte imbricata, interiora enervia. Vaginula cylindrica, medio tumida. Seta erecta, lævis, tenuis, viridis, tandem rufescens. Capsula basi strumosa, obtuse costata, costis opacis coloratis, intervallis autem incoloribus. Annulus adest spurius, seu membranæ annulari similis. Peristomii dentes sæpe diffracti, integris vero late lanceolatis, obtusis, ad lineam axalem perforatis, rufescentibus, vix trabeculatis. Columella capsulæ æqualis, linearis, tubulosa.

Not aware of any described genus to which we could refer this curious plant, we have been reluctantly obliged to propose a new one. The present moss grew intermixed with *Fissidens turbinatus*, Tayl., and has all the superficial habit of that genus; even the teeth of the peristome show a propensity to be divided. The fruit is truly lateral and even radical. No male flowers have been observed; hence we conclude our species to be not monoicous.

SCHIZHYMENIUM, *Schwaeg.*

1. S. *nanum*, Tayl. Caule cæspitoso, erecto, subsimplici, basi nudo; foliis erectis, arcte imbricatis, ovatis, acuminatis, subintegerrimis, nervo evanescente; capsula erecta (demum horizontali,) pyriformi, hinc gibba; setis cæspitem vix superantibus; operculo minuto, convexo; peristomio subnullo.

On Pichincha. *Prof. W. Jameson.* Dec., 1846.

Tufts scarcely half an inch high. Perichætial stems very short, at the base of the barren ones, all of them simple. Specimens of what we take to be *Schizhymenium bryoides*, Hook. (as given in Schwaeg. Supp. t. 328, *a.*), received from Professor Jameson, have a conical lid, in other respects they do not appear to differ from Schwaegrichen's plate, except, perhaps, by the longer and more gibbose capsules. The present species is distinct from both by the more ovate leaves, which are nearly entire, and by the peristome, which

is nothing more than a short, scariose membrane scarcely longer than the *annulus*, and is very irregularly divided. No male flowers were observed.

CRYPHÆA, *Mohr.*

1. C. *Jamesoni*, Tayl. Caule decumbente, basi ramoso; surculis vage pinnatis, apice incrassatis; foliis imbricatis, erectis, late ovatis, longius acuminatis, margine reflexis, nervo ante acumen evanescente, acumine denticulato; capsulis heteromallis, cylindricis; operculis conico-acuminatis, inclinatis; foliis perichætialibus scariosis longissime acuminato-setaceis, enerviis.

On trees, on Pichincha. *Prof. W. Jameson.* Dec., 1846.

Stems three to four inches long. Shoots pale green, complanate, simple at the base and at the *apex*, with a few patent branches about the middle. *Perichætia* in a clustered series at one side of the branch, often six or eight together. Calyptra split on one side. An *annulus* is present. Peristome whitish; the *inner* of sixteen setaceous *laciniæ* alternating with the teeth of the outer peristome, and united at the base by the inner membrane of the capsule. This comes very near to C. *patens*, Hornsch., in size and in ramification, the difference consisting principally in the shorter nerves of the leaves, in their far more elongated points, but especially of those of the *perichætium*, and in the less considerable denticulation of their tops; besides, the *perichætia* are more closely clustered, while the capsules are more slender. No male flowers were observed.

NECKERA, *Hedw.*

1. N. *gracillima*, Tayl. Monoica. Caule adscendente, implexo, vage subpinnatim ramoso; foliis erecto-patentibus, siccitate arcte adpressis, late ovatis, longius apiculatis, nervo ante apicem evanescente, integerrimis, basi marginibus reflexis; capsula erecta, inæquali, cylindrica, ore contracto.

On trees, on Pichincha. *Prof. W. Jameson.* Dec., 1846.

Stems scarcely one inch long; shoots very slender, slightly incurved at the tops, green, but often tipped with straw-colour, perhaps from exposure to cold. Perichætia whitish, shining, occurring towards the base of the shoots. *Outer* peristome of

sixteen trabeculate pale teeth, each marked at the base with a longitudinal opaque line, *inner* of sixteen pale setaceous *laciniæ,* united at the base by the inner membrane of the capsule. The habit is of *Pterogonium filiforme,* Hedw., but the peristome is different; besides, the leaves are strongly nerved, and with longer *apiculi.*

2. N. *obtusifolia,* Tayl. Caule prostrato, elongato, pinnato; pinnis patentibus, complanatis; foliis imbricatis, erecto-patentibus, concavis, oblongo-acinaciformibus, obtusis, integerrimis, summo apice incurvo, enerviis, siccitate subplicatis; perichætiis subheteromallis; capsula erecta, ovata, immersa; foliis perichætialibus exterioribus minutis, interioribus concavis, acuminatis; operculo rostrato, inclinato.

On Pichincha, 1827. *Prof. W. Jameson.* Dr. Greville's Herb.

Stems eight to twelve inches long, the younger branches pale yellowish-green. Leaves distichous; in a third row beneath the stem, they are fewer and at unequal distances; the inferior margin at the base is incurved; their summits have an exceedingly short *apiculus,* beneath which is a considerable cavity. Calyptra dimidiate. Inner peristome very slender, and sometimes very short, connected at the base by a very shallow membrane. This has the habit of *Neckera disticha,* Sw. Fl. Ind. Occid., which we have from the late Mr. Dickson. Swartz's plant is much smaller, has leaves more obtuse, and destitute of any *apiculus,* besides, they are furnished with a distinct though short nerve, and the capsule is not concealed within the *perichætium.* No male flowers were observed.

HOOKERIA, *Smith.*

1. H. *parvifolia,* Tayl. Monoica. Caule gracillimo, repente, laxius pinnato; surculis subcomplanatis, brevibus; foliis minutis, laxe imbricatis, erecto-patentibus, siccitate incurvis, crispulis, ovatis, concavis, obtusiusculis, papillosis, integerrimis, nervo hyalino infra apicem evanescente; perichætio conspicuo; capsula ovata, cernua; operculo longirostro; seta scabra.

On soil; Puerto del Napo. *Dr. Manuel Villavicensio.* Communicated by *Prof. W. Jameson.* May, 1847.

Stems loosely cæspitose, whitish, with dark purplish-brown radicles. Shoots of a lively green, scarcely exceeding three lines in length. In a dry state the white nerves are conspicuous on the incurved backs of the leaves. Perigonial and perichætial leaves cellulose but not papillose, whiter than the cauline. *Perichætia* curving up from the under side of the stem, the exterior leaves very minute, the upper and inner lanceolato-subulate, and with a percurrent nerve, all closely adpressed and erect; the perichætia have their own radicles. Seta very slender, about half an inch long, curved at the top. Calyptra subulate, entire at the base. Inner peristome with sixteen subulate *laciniæ.* Allied to its congener from the Andes, H. *radiculosa,* Hook., differing (if we may judge by the figure given in Musc. Exot. t. 51,)by its far minuter size, the longer hyaline nerves of the leaves, the more pinnate habit of its stems, the more distant leaves, the longer *operculum,* and the scabrous pedicels.

HYPNUM, *Linn.*

1. H. *clinocarpum,* Tayl. Caule procumbente, implexo, vage ramoso, ramis brevibus, subcomplanatis; foliis laxis, patentibus, concavis, estriatis, late ovatis, acuminatis, dentatis, ultra medium uninerviis; setis scabris apice decurvis; capsula ovato-oblonga, inæquali, inclinata.

On Pichincha. *Prof. W. Jameson.* Dec., 1846.

Stems one to two inches long; shoots rather compressed. Pedicels about one inch high, roundly curved down at their tops. Inner peristome divided into sixteen split *laciniæ,* with three very short filiform processes interposed between each pair. Calyptra dimidiate. This may be compared with H. *rutabulum,* L.; but the leaves are more distant, more patent, and destitute of *striæ*; while the capsule is cernuous from the curving down of the pedicel. No male flowers observed.

2. H. *Conostomum,* Tayl. Caule decumbente; surculis erectis, ramosis, erectiusculis, subcomplanatis; foliis arcte imbricatis, erectiusculis, concavis, ex cordato-ovata basi longe tenuiterque acuminatis, serrulatis, margine reflexis, substriatis, ruptinervibus; capsula cylindrica, leniter incurva; operculo conico; seta lævi.

On Pichincha. *Prof. W. Jameson.* May, 1847.

Shoots whitish-green, thick, rather flattened, about one inch long. Leaves thickly set, their points long, their base very concave, striated when dry, and slightly so when wet, serrulate throughout the margin, their nerve short. Capsule unequal. Peristome standing up as an obtuse cone; the *inner* with sixteen imperforate *ciliæ*, having pairs of filiform processes interposed. Pedicel not much overtopping the shoots. Capsule nearly erect, never cernuous. No male flowers observed. Differs from H. *lætum*, Brid., by the elongated fine points of the leaves, by their smaller serratures, by the less pinnate stems, by the thicker and more shining shoots, by the more concave leaves, whose nerves are shorter, and by the smaller *perichætium*.

3. H. *disparifolium*, Tayl. Caule procumbente, implexo, subpinnato; foliis imbricatis, secundis enerviis, serratis, caulinis late cordatis longius apiculatis, rameis lanceolatis acuminatis; capsula subcernua, subspherica; operculo longius rostrato; seta lævi.

On Pichincha. *Prof. W. Jameson.* Dec., 1846.

Shoots pale yellowish-green, branches short, the upper falcate. Stem-leaves with a very broad somewhat decurrent base. Pedicels about one inch long, bent at the top, so that the capsule appears cernuous. Inner peristome of sixteen *laciniæ*, rarely with a very inconsiderable filiform process interposed. Calyptra dimidiate. This has some resemblance to H. *flagellare*, Dicks.; but the capsule is nearly round, and the leaves on the branches lanceolate and acuminate. No male flowers observed.

4. H. *conchophyllum*, Tayl. Monoicum; caule decumbente, pinnato; surculis complanatis; foliis laxe imbricatis, patentibus, subdistichis, ovato-lanceolatis, acuminatis, ruptinervibus, subdenticulatis; capsula anguste oblonga, cernua; operculo rostrato; seta lævi.

On Pichincha. *Prof. W. Jameson.* May, 1847.

Stems irregularly pinnate. Leaves gradually acuminated, their nerve scarcely extending above the middle, their margins plane, except at the very base, where they are somewhat reflexed. *Perichætia* conspicuous, whitish. Calyptra dimidiate. Lid nearly as long as the capsule. Vaginula whitish, cylindrical. *Ciliæ* of the inner peristome perforate, a pair of filiform processes interposed. This differs from H. *Megapolitanum,* Bland., by the narrower leaves (not at all cordate,) and which are gradually (not suddenly) acuminate, also by the smaller size, paler colour, and more patent foliage.

5. H. *latifolium,* Tayl. Caule procumbente, vage pinnatim ramoso; ramis brevibus, subincurvis; foliis laxis, subcomplanatis, subdistichis, patentibus, late cordatis, serratis, enerviis, margine basi reflexo; capsula ovata, cernua; operculo conico; seta lævi.

On soil; with Hookeria *parvifolia,* Tayl. Puerto del Napo. *Dr. Manuel Villavicensio*; communicated by *Prof. W. Jameson.*

Stems very slender. Shoots pale green. Leaves rather distichous, patent, almost squarrose, their points elongated. Inner peristome with sixteen minutely perforate *laciniæ,* having paler and shorter but similarly perforate processes interposed, which, however, sometimes divide at their *apices.* No male flowers observed. *Perichætia* very short. Numerous are the foreign *Hypna* with a similar aspect, and with patent, nerveless and subdistichous leaves; we have seen none of the minuter species, (among which ours must range,) with leaves so widely cordate, or with so short a conical lid.

6. Hypnum? *leucotrichum,* Tayl. Caule prostrato, longissimo, pectinato, apice simplici, elongato; ramis brevibus, patentibus, complanatis, incrassatis, apice arcte convolutis; foliis lucidis, imbricatis, caulinis raris, adpressis, rameis erecto-patentibus, siccitate plicatis, rotundato-oblongis, elongate apiculatis, piliferis, pilo subdenticulato, concavissimis, mediotenus tenuinerviis.

On Pichincha. *Prof. W. Jameson.* Feb., 1847.

Stems one foot and a half long; branches half an inch long, closely set; but the summits of the stems, for one or two inches, are simple and have but a few distant leaves. The new shoots on the summits of the branches, having the leaves closely compressed into brownish points, may be mistaken for *perichætia.* This bears some resemblance to a variety of H. *palustre,* L., found on wet rocks in rivers in Ireland, but is easily distinguished by the more suddenly acuminated leaves, and by their distinct though slender nerves. No male flowers were observed.

LESKEA, *Hedw.*

1. L. *pygmæa*, Tayl. Monoica. Caule decumbente, subramoso, debili, complanato; foliis imbricatis, erecto-patentibus, lanceolatis, acuminatis, integerrimis, enerviis; capsula erectiuscula turbinata, ore amplo; operculo rostrato; seta lævi.

On *Octoblepharon albidum*, Hedw. Puerto del Napo. *Dr. Manuel Villavicensio*; communicated by *Prof. W. Jameson.* May, 1847.

Stems rarely one inch long, whitish, slightly green, shining, crowded towards the top. *Perichætia* minute, lateral. *Outer* peristome of sixteen teeth, each marked with a longitudinal dark line, *inner* of sixteen *laciniæ*, which sometimes have between them a very short process. Capsule slightly inclined, much reticulated, brown. Plants scarcely observable with the naked eye, in short, more diminutive than any species we have seen. Male flowers two or three together at the base of the shoots.

FABRONIA, *Raddi.*

1. F. *Jamesoni*, Tayl. Monoica. Caule abbreviato, laxe cæspitoso, ramoso; foliis patentibus, subsecundis, late lanceolatis, acuminatis, ciliatis, mediotenus uninerviis, acumine elongato, incolori, integerrimo; capsula subinclinata, oblongo-turbinata; perichætio subradicali.

Picked out of a tuft of Neckera *gracillima*, Tayl. On trees: on Pichincha. *Prof. W. Jameson.* Dec., 1846.

Tufts scarcely half an inch high. Stems very slender. Shoots of a pale lively green. Leaves, in a dry state of the plant, secund yet very patent; their margins at the base with large and wide cells, elsewhere the cellules are linear. Pedicel three to four lines long. Capsule with a narrow obconical *apophysis*. Peristome of sixteen equidistant lanceolate obtuse teeth, each marked with a longitudinal opaque line. Confessing that we have never seen the Swiss F. *octoblepharis*, Schwaeg., if we may judge by the description and figure, ours may readily be distinguished by the more upright branches, the less imbricated and subsecund leaves, whose ciliation is far longer, and whose nerve is very distinct, as well as by the longer pedicels and more inclined capsules.

Plagiochila, *Nees* et *Mont.*

1. P. *macra,* Tayl. Caule laxe cæspitoso, surculis adscendentibus, subsimplicibus, rectiusculis; foliis remotis, semiverticalibus, curvato-patentibus, anguste obovatis, obtusis, apice denticulatis, margine utroque recurvo, ventrali integerrimo, vix decurrente; calyce terminali, ex angusta basi elongata ovato, truncato, hinc marginato, ore ciliato-dentato, hinc fisso.

On Mosses: on Pichincha. *Prof. W. Jameson.* Dec., 1846.

Shoots pale olive, an inch or more long. Leaves distant by their own length, convex. Cellules rather large. Pedicel exserted by the length of the calyx. Capsule oblong. Calyx subcompressed, scarcely alate, but with an opaque suture on the upper side. The leaves are far narrower than in P. *divaricata,* Lind., as well as more distant, and their denticulation is more minute; the calyx, too, has a narrower base, and is marginate on one side with a spurious *ala.*

2. P. *fragilis,* Tayl. Caule cæspitoso, erecto, subramoso, apice incurvo; foliis madore fragilibus, arcte imbricatis, secundis, erectis, obcordatis, dentatis, margine *dorsali* recurvo decurrente, *ventrali* basin usque dentato.

On Pichincha. *Prof. W. Jameson.* Feb., 1847.

Patches pale olive. Stems about one inch long, very slender. Leaves crowded, obcordate or ovate, with a shallow division on the top, with segments slightly recurved; the dentation irregular; the older leaves mostly erôse or broken; those at the summit crowded into a flattish incurved *capitulus;* the *dorsal* margin recurved and tumid, the *ventral* toothed to the very base, and even below it on a decurrent process. This approaches near to P. *bifaria,* Sw. (*Lind. Sp. Hep.* t. xxxvi.), it is, however, a smaller plant, has the leaves far more wide at their tops, where they are divided by a shallow *sinus;* besides, the ventral margin is toothed to the very base.

THYSANANTHUS, *Lindgb.*

1. T. *Mexicanus*, Tayl. Caule laxe cæspitoso, subflexuoso, ramoso; foliis imbricatis, patentibus, oblongis, acutiusculis, apice incurvis, integerrimis, lobulo obliquo, ovato, in laminam subdentatam folio applicatam desinente; stipulis tenuibus, rotundatis, integerrimis; calyce axillari, oblongo, trigono, lævi.

On Pichincha. *Prof. W. Jameson.* Feb., 1847.

Stems brown, loosely entangled. Leaves with large cellules, decurrent from the top of the lobule; the perichætial minute, erect. Pedicel as long as the calyx. Capsule spherical, at length dehiscing into four erect valves. Calyx flat and grooved above, and having an obtuse *carina* beneath, destitute of any margination, the base very narrow. Allied to our T. *anguiformis* from New Zealand; the stems and branches are longer, the leaves not so crowded, the calyx is destitute of angles, nor is it crowned with a tube as in that species; the stipules, too, are more round.

LEJEUNIA, *Libert.*

1. L. *epibrya*, Tayl. Caule implexo, procumbente, vage ramoso, subfasciculato; foliis imbricatis, patenti-recurvis, oblongis, acutiusculis, integerrimis, lobulo oblique ovato quam folio suo duplo breviori; stipulis rotundato-ovatis, bifidis, sinu obtuso; calyce axillari, obovato, lævi, basi nudo, ore mucronato.

On Mosses: on Pichincha. *Prof. W. Jameson.* Feb., 1847.

Patches minute, yellowish-green. Stems four to five lines long. Leaves loosely imbricated; the perichætial distant from the base of the calyx, erect, obovate, their lobule minute, the stipules with acuminate segments. Pedicels divided by opaque projecting *septa*. Calyx destitute of angles or wings. This has a strong resemblance to L. *serpyllifolia*, Lib.; yet the cellules of the leaves are much larger, the leaves are longer and more recurved, the stipules larger, the calyx smooth, and naked at its base.

BOTANICAL INFORMATION.

Scientific Mission to Thibet.

Again, as announced in a note at p. 103 of the present volume, we have had the satisfaction of receiving further information respecting the Thibet Scientific Mission, in a letter from Dr. Thomson, dated

"Camp, Nûbra Valley, Oct. 26th, 1847.

"My letters (if they have reached you regularly), confused and hurried though they be, will, I trust, to a certain extent, have made you acquainted with my route and the general appearance of the country and vegetation. I wish much that the southern parts of Chinese Tartary had formed the destination of our expedition, and I am sanguine enough to hope that I may yet have an opportunity of visiting them. My last letter was dated 27th Sept., at which time we were at Giah (13,000 feet), five marches from Leh. We descended the Giah stream to the Indus, which we reached in two days. Our road lay along a narrow rocky ravine, opening out, in one or two places, into a small plain, with a village and cultivated fields. The crops (wheat, barley, and *Sinapis* for oil) were all cut, and, indeed, the vegetation much too far advanced to enable me to get a very good idea of it. The Rose (R. *Webbiana*?) appeared soon after leaving Giah, and I obtained two *Labiatæ* and a *Cichoracea* still in flower, which I had not previously seen. The best mark of decreasing elevation was the appearance of trees. At Giah there were two or three Poplars and Willows, while on the banks of the Indus they existed in considerable numbers. From the place where we came to the Indus to Leh, the valley of the river is of considerable breadth, consisting of sloping plains of alluvial conglomerate, dry, stony and barren, where there is no water, but well cultivated, and with many trees where water is obtainable either naturally or by artificial means. Good engineering would, no doubt, much increase their numbers, and bring a very great part of the valley into cultivation. I am sorry to say that the advanced state of the season rendered my means of becoming acquainted with the vegetation very limited. There is no natural wood larger than *Hippophae*. Two Poplars, P. *dilatata*, I believe, and a cordate-leaved one, and a Willow, like *Russelliana*, but broader leaved and exceedingly variable, are cultivated. An *Echinops* abounds on the dry stony plains, with a very handsome blue *Nepeta*, and remnants of *Potentillæ, Melilot, Lucerne,* &c., &c., lined the banks of the water-courses. *Hippuris* is common in marshy places. I have notes of the species observed every second or third day, and oftener when the elevation changed, which will enable me, by comparing them together, to define, as accurately as the season permits, the changes which have taken place during my journey.

"At Leh we remained a week to rest, after two months almost continual marching, and to make arrangements for the future. Our instructions were to proceed down the Indus, to regions where the season in winter would be sufficiently mild to enable us to move about; and we determined to take different routes,—Captain Cunningham proceeding to the south of the Indus, while I crossed over the range of hills to the north, and descended to the Shayûk or northern branch of the Indus, about one half of which has never been explored. I left Leh on the 11th, and reached the Shayûk on the 14th. The intermediate mountains were covered with fresh snow, of which we had a slight sprinkling one day at Leh (a little above 11,000 feet). The Shayûk branch is stated by Vigne to be 1000 feet more elevated than the southern, which runs near Leh; that is, about the elevation of Leh itself, which must be very nearly 1000 feet above the river. Judging from the vegetation, I should think that this is a mistake. I found water to boil at 103° 2′ F., which will give you the elevation roughly. I have not the means with me of reducing my observations. The Shayûk runs through a wide gravelly channel, bordered on each side by high snow-tipped exceedingly barren mountains; but in many places, where water abounds, the plain is covered with a dense jungle, principally of *Hippophae*, growing to a small tree. I turned up the Nûbra Valley (from which I now write), with the object of trying to cross the mountains to the north east, to reach the source of the Shayûk in a lake, called by Vigne, the 'Nûbra Chu;' but I found the distance so much greater than I had anticipated, and the state of the weather so very cloudy, and snow threatening, that after visiting the hot springs at Pânânikle, described by Moorcroft, I gave up the attempt, and determined to proceed at once down the Shayûk to Eskardo. The Nûbra Valley is exactly like the part of the Shayûk I have seen, a broad, flat, gravelly plain, even more densely jungled than the former wherever there is water, and equally barren where there is none. In both I have met with several new plants. A *Lycium* with fleshy leaves and ripe fruit, is very abundant; and there is a very remarkable Willow (?) the leaves of which, usually linear and toothed in the upper branches, become broadly oval. I am not at all sure of the genus of this tree, having seen only one withered small female catkin, which broke when touched. The villages are numerous, and trees are abundant round them, much larger and finer than in the Leh valley. Poplars and Willows abundant, and in addition, Apricots (of which there are very few at Leh), *Eleagnus Moorcroftiana*, I presume, Apple, Wallnut, and a species of *Ulmus* (?) for so I guess it to be in the absence of flowers and fruit. I have collected the seeds of a number of plants, in addition to those I forwarded to you from Haulé; among others a *Sophora* (?) with spinous stipules strikes me as something out of the common way. Excluding the flowers, of which I know nothing, its characters are those of S. *velutina*, Lindley, as given in Walpers, T. 806; but the spinous stipules would of course have been noted had it been that species. I hope the seeds will grow, and that it will prove ornamental.

"The general character of the vegetation I have passed through is undoubtedly Altaic, but with strong peculiarities. *Caragana* seems limited to the alpine region, stopping at about 13,000 feet, that is, not occurring below that. The *Astragali* prefer a lower region, but I miss, hereabouts, many of those I found in Kunawur. There is no *Statice*, I presume they frequent less alpine regions, and I expect to meet with them as I go down the river, as they abound in Affghanistan, and I ought to find a somewhat similar Flora as I go westward, till I come down to a sub-tropical elevation. Herbaceous plants are now almost entirely withered up, except near streamlets, where I still recognise *Veronica Beccabunga, Glaux*(?) *Gentians, Eleocharis, Taraxacum,* &c., &c. Several species of *Artemisia* are common, but dried up, and the same Rose as grows in Kunawur, I have found all along below 13,000 feet. A little *Potentilla* is the only plant which entirely sets at nought all restriction with respect to elevation; abundant here, it is equally so at 16–17,000 feet.

"With regard to *Cryptogamia,* my knowledge of whose tribes is more limited, I fear I shall hardly give you satisfaction, for though I have been at a good deal of pains to collect, yet an inexperienced eye is apt to pass over much that is valuable. There is one alpine Fern, which grows in crevices of walls and rocks at 11–16,000 feet. Mosses I find in plenty, but without fructification, in most places: I begin to think that they produce their capsules in early spring, when copiously moistened by the melting snow; even aquatic species are quite without fruit. There are no tree Lichens, but plenty on stones, though not much variety. I have one or two *Charæ,* five or six confervoid species, and what is curious, to me at least, a fucoid *Alga,* growing in what is, as far as taste goes, fresh water, and in which it floats without any apparent attachment.

"With regard to the future, I think I could not sketch out any better route, at this season, than that proposed for me, down the Indus as far as Silgit, and if I find it practicable, as far as Peshawur, to complete the connexion of the present alpine or subalpine Flora with that of the Indian plain. I shall not add much *en route* to my Herbarium, but shall, at all events, be able to note the gradual appearance of new trees and shrubs as I descend to lower elevations. As *Pinus Gerardiana* occurs in Affghanistan, I may, perhaps, meet with it on the Indus. I have already gathered a single specimen of an *Acanthophyllum,* I think, a Cabool group, and may therefore expect *Statice,* &c., as I advance. Cashmere, now on my left, is a great temptation; but I should find snow on the mountains, and no plants in the plains at this season; and I shall surely be able, while in the neighbourhood, to pay it a visit some time next summer, when there will be better botanizing. My object, at present, is to get down to 3–4,000 feet, where I shall find a cold weather vegetation. With regard to next year I am quite in the dark. If any further steps are taken with regard to our original Chinese commission, I hope to be ordered back to proceed to the southward; if not, I should like to spend the summer in the range to the north of the Indus, crossing it back and forwards in two or three places, and penetrating as far into Chinese Tartary as practicable. The northern face of these mountains is understood to be without villages for a very considerable distance from the crest of the ridge, which would enable a traveller, with little baggage, and carrying provisions for himself and party, to penetrate to a considerable distance. This, however, would only be possible to the eastward, the wild Mahommedan tribes to the westward being by no means trustworthy, indeed, absolutely the reverse; and I have no wish to hazard another captivity, or worse. I shall, I hope, hear more of Dr. Hooker's motions bye-and-bye. I look upon the talked of embassy to Lassa as highly problematical; and unless positive instructions are forwarded from Pekin by the Emperor, no European will be allowed to pass the boundary. Cashmere, therefore, I am inclined to regard as the most likely rendezvous, should he visit India; but his plans, however, being still quite unsettled, it is vain to speculate at present.

"Pray accept my best thanks for your kind offer and hints regarding books; there are so many which I should like to have, that it is difficult for me to name. Ledebour's Flora Altaica would be invaluable, for though I have the Flora Rossica, it is incomplete. I think, also, I cannot do without Jacquemont, as most of the species figured in his work are from Kunawur and Cashmere: of that, however, you are a much better judge than I can be, and whether I ought to get Wallich's Pl. Asiat. Rar., Jacquemont, &c., or be confined to less costly books. My expenses are now almost entirely limited to carriage; so that I trust soon to have it in my power to provide myself with a very complete botanical library. I am, however, at present, I believe, better without it, for the wear and tear of travelling, with occasional falls and wettings, are terribly destructive to books. I should like, very much indeed, to possess a selection of the most useful works on the Flora of Russia, Siberia, and Altai; because I hope, after my travelling is over, to be permitted to spend six months at some of the hill-stations, arranging my collections. I shall return to England as soon as I am entitled to my furlough, which will be in April, 1850, two and a half years hence, bringing, I trust, a fine collection of the plants of Northern India. Being now alone, I have surveying (a very laborious task to an inexperienced hand) added to all my other work, and it is only by halting a day that I can write letters.

"THOMAS THOMSON."

Notes and Observations on the Botany, Weather, &c., of the United States of America, made during a tour in that country, in 1846 *and* 1847. *By* WM. ARNOLD BROMFIELD, M.D., F.L.S., &c.

(*Continued from* p. 161.)

On our way to the North Valley Hill, I saw, for the first time, growing abundantly on the Mica slate range, those two curious and diminutive oaks, the Bear or Black Scrub Oak (*Quercus Banisteri*), and the Dwarf Chestnut Oak (*Q. Chinquapin*), as if Nature, in a moment of frolic or caprice, had resolved to set at nought all those conventional ideas of stateliness and utility we attach to the forest monarch, by the creation of oaks with trunks in the first of these species seldom exceeding the thickness of the wrist, and in the second hardly stouter than the little finger, and of a height proportionate to these very contracted dimensions. But in this, as in other instances where Nature is attentively considered, she vindicates the wisdom of her ways against the ignorant and self-sufficient caviller. These two dwarf oaks commonly grow together, and often cover, exclusively, entire tracts of the poorest and most unprofitable soil, and if yielding neither timber nor fuel, nor subserving the purpose of ornament, make amends by the profusion of acorns they bear, by which the branches are often weighed down; and thus, whilst their nobler forest congeners dole out an often scanty and partly inaccessible repast to the expectant tribes roaming in quest of food at their feet, these diminutive oaks spread a banquet at once ample and accessible to all.

The Bear Oak, so called from the fondness of those animals for its mast, here forms bushes from five or six feet in poor and dry, to eight or ten in moister and more fertile soil, and in woods; and were it not for the singular configuration of its leaves, which are peculiarly its own, might be supposed a young state of some other species. The branches are uncommonly tough, and the acorns as plentiful as in the Dwarf Chestnut Oak, which, in the adult state, is seldom above two feet in height. This last, with its weak slender, straggling stem, (for it cannot be termed a trunk, being often no thicker than the branches it gives off,) and its disproportionately large leaves has the air of a sapling of some of the other oaks of the Prinos section, to which it belongs; but its constantly low stature, diffuse habit, and superabundant fruit, stamp it as an unquestionably permanent and distinct species.

In crossing the North Valley, on our return home this evening, the air felt quite chilly. Mr. Townsend tells me that in this part of the United States they are liable to frost in every month of the twelve, and he remembers, some years ago, a fall of snow at West Chester (Lat. 40°) on the 11th of May, which, by its suddenly melting as the sun acquired elevation, did much mischief to the fruit trees.* The night, though cold, was most lovely and moonlight, and enlivened by the vociferous clamouring of the Katydids, that had just commenced their annual rehearsal of "the half suppressed—half sland'rous tale," in the lofty trees along the road.

During our stay at West Chester, I accompaned Dr. Darlington in an early morning stroll to the Serpentine Ridge, a short distance from the town. My notes of this, to me, most instructive and agreeable ramble, are unfortunately missing, which prevents me from giving more than a very imperfect list, from memory, of the species observed, some of which are mainly or entirely confined to the rock in question. This is the case with the pretty and curious portulacaceous plant *Talinum teretifolium*, which grows on the bare Serpentine in the manner of a *Sedum*, of which it has quite the habit, with the almost indestructible vitality of our own *S. Telephium*, or of *Bryophyllum calycinum* of India. For dry rock-work, this would, perhaps, prove as eligible as ornamental, since no drought would injure it, however long continued. Another plant, nearly confined here to this formation, is the handsome grass *Atheropogon apludioides*, the anthers of which are of a lovely vermilion or cinnabar colour. *Scirpus* (*Fimbrystilis?*) *Baldwinianum* grew abundantly in plashes between the sterile and denuded banks of Serpentine, which is, perhaps, the polar limit of this rather southern than northern species. The other plants, pointed out by my kind guide, were *Polygala ambigua* and *verticillata*, *Lobelia Claytoniana*, *syphilitica*, and *inflata*, (*L. cardinalis*, I had seen abundantly elsewhere in this vicinity). *Convolvulus panduratus*, *Cyperus diandrus*, *Asclepias verticillata*, with many more I cannot now call to remembrance. *Abutilon Avicennæ* is frequent by way sides about the borough, where Dr. Darlington pointed out to me a variety of *Arctium Lappa* with pinnatifidly incised leaves.

---

* A similar phenomenon, of which I was a witness, occurred in this island (Isle of Wight,) on the 14th of May, 1839, when the ground in various parts of it was covered for some hours with snow, a few inches deep, till after mid-day.

In the garden of Mr. Joshua Hoopes, a member of the Society of Friends, and a zealous cultivator of indigenous and foreign trees and shrubs, to whom my warmest thanks are due for his many good offices during my stay at West Chester, grew noble plants, at least six feet high, of *Tripsacum dactyloides*, from a wild station in the county. This fine grass, of so tropical a character in size, habit, and structure, is now known to extend as far north as Connecticut.

I had the pleasure whilst here of being introduced to Dr. Rivinus, a lineal descendant of the great German systematic botanist of the seventeenth century, himself, I believe, a native of Germany, and now settled as a physician in West Chester. Dr. R. inherits his ancestor's love of plants, and in his well-kept garden I saw an attempt to acclimatize two of our English evergreens, the Bay and the common Laurel, hitherto, I believe, with some success; but the plants I saw were quite small and young, and the winter of Pennsylvania is too severe to allow of these species standing out unprotected by a covering of straw or mats at that season, which must ever prevent their attaining to anything like the size they do in our shrubberies. Protected in like manner, a specimen of *Lagerstromia Indica* had stood through more than one winter in the open ground. This lovely species adorns the gardens of the southern states, where it is called Crape Myrtle, from the crisped or curled appearance of the flowers, and there rises commonly to twelve or fifteen feet, with a smooth naked stem of eight or ten inches in diameter.

August 14th. Set off at two, P.M., with Mr. Townsend, in a rockaway to the Forks of the Brandywine, amongst charming woodland scenery, interspersed with high cultivation, thriving farms, and rich pastures, which had, even at this season, from the moisture of the earlier part of the summer, all the verdure of English meadows. The effects of a destructive hurricane, which happened only four days previously, and unroofed several houses in West Chester, were manifested by the many large trees we saw lying uptorn in the woods. At Philadelphia, which escaped much of its fury, the storm came up from the south-west, between two and three, P.M., on the 9th, with so much darkness, as to make it necessary to light the gas in the hall and dining-saloon of the hotel. From the deep gloom, the great heat of the weather, and the reputation the climate enjoys for violent electric commotions, I was prepared for something much more sublime and appalling; but through this very hot summer I have been witness to but few thunderstorms, and those not comparable in duration or intensity to very many seen in our own country. Amongst the plants gathered in this day's excursion were *Urtica Canadensis, Arum triphyllum, Impatiens pallida* and *I. fulva, Michella repens, Andropogon avenaceum, Panicum capillare, Leersia Virginica* (in the damp woods, but scarcely in swampy places, like *L. oryzades*), *Bohmeria cylindrica, Lobelia syphilitica, cardinalis,* and *inflata, Cuphea viscosissima, Solidago* (various species,) *Erigeron Philadelphicus, Eupatorium ageratoides, Anychia dichotoma, Adiantum pedatum, Aspidium acrostichoides, Hamamelis Virginica, Cephalanthus occidentalis, Tilia glabra, Fagus ferruginea, Carpinus Americanus, Ostrya Virginica, Ulmus fulva,* and *U. Americana.* In the shallows of the Brandywine, a pretty picturesque stream, eventful in the annals of American independence, Mr. Townsend pointed out to me *Vallisneria spiralis* and *Podostemon Ceratophyllum,* the latter attached to pebbles under water by small fleshy processes emitted from the stem; we did not find flowering specimens at this time, though at the right season, for their production. Under Beech trees (*Fagus ferruginea*), *Epiphegus Americana* (Beech-drops, or Cancer-oot) was not uncommon here, as well as about Philadelphia. In a damp sloping wood Mr. Townsend showed me the true Ginseng (*Panax quinquefolium*), not very plentiful in this, its only known station, I believe, in the county. Its bright scarlet fruit was already partly matured, but the plant was quite past flowering. This celebrated species is quite rare in the Atlantic States, but abounds in those of the north-west, from whence great quantities are, or used to be, exported to China, where it is as much in demand as the drug from Tartary. The fresh root I found possessed a slight sweetish taste, with a very inconsiderable degree of aroma.

Philadelphia, August 16th.

An extremely hot day, with a feeling of humidity, causing general complaints of the oppressive state of the atmosphere. Therm. at one, P.M., in the cool hall of Jones's hotel, 85°. At St. Philip's and St. Andrew's churches I found the entire congregation, men and women, cooling themselves with fans resembling hand fire-screens, the clergyman in the desk reading and fanning himself with great assiduity: the heat might, indeed, justify this somewhat irreverent manner of officiating, being extreme, and the congregation pretty numerous. Walked out after church with my friend Thomas P. James, Esq., Secretary to the

Horticultural Society of this city (a gentleman to whom my warmest acknowledgments are due for his repeated acts of kindness during my stay in Philadelphia), to the station for the rare and curious *Nelumbium luteum,* which grows abundantly in some of the ditches that divide the low pasture-fields near the Delaware, on the south-east side of the town beyond the Navy-yard, and which greatly resemble the marshy meadows along the Thames at Battersea or Woolwich. The *Nelumbium* is here associated with abundance of gigantic *Pontederia cordata, Sagittaria sagittæfolia,* var. *latifolia, Sparganium* (*Americanum?*), *Zizania aquatica, Isnardia palustris,* and other water-plants, and was at this time partly in flower, and partly in unripe but fully-formed fruit. The species makes a fine appearance with its large, truly peltate leaves eighteen inches or two feet in diameter, some floating on the water, others elevated a foot or more above the surface on long petioles. The flowers, which are also raised above the water on still longer cylindrical peduncles, are as large or larger than those of *Nymphæa alba,* of a delicate, pale lemon-yellow, and apparently very fugacious. I procured, by means of a negro man, who waded after them, one half-opened flower, a few buds ready to expand, (which I could not succeed in making them do afterwards by placing them in water, through the falling away of the petals,) and as many of the enlarged obconic, spungy tori or receptacles, like huge poppy heads, in whose flat truncate disks the seeds or nuts are almost wholly imbedded. These, which are esculent and ripen here in September, are collected by the boys and sold in the streets, and markets of Philadelphia, under the name of Water Chinquapins, from the resemblance in flavour, and somewhat in shape to the fruit of the Chinquapin or Dwarf Chestnut, *Castanea pumila,* which first makes its appearance in the parallel of Philadelphia. A tradition is still current of the *Nelumbium* having been planted by some botanist of former times in its present situation, but no credit seems due to the obscure report, when we consider that the species is now ascertained to inhabit various parts of the United States as far north as Lake Ontario, and though the station (marsh ditches) is so far an artificial habitat, we know that such receptacles soon become filled with a vegetation perfectly spontaneous, whilst its origin is a problem not yet satisfactorily solved by physiologists. It is farther reported, I know not with what truth, that all attempts to naturalize the *Nelumbium* in other localities about Philadelphia, as well as to cultivate it in ponds for ornament, have hitherto proved abortive.

August 18th. Visited the Navy-yard, which, like every other public institution in America, the Mint not excepted, is open to the inspection of the community, without fee or formality; nor does any inconvenience or interruption to business arise from this unrestricted admission, as is alleged would result from the adoption of the same liberal system in England. There was not much going on in the building-slips, and in this, as in all the dockyards I visited in America, I was surprised at the little use made of machinery as a substitute for manual labour, in a country where wages are high, though hands are plentiful, and under a government professing to be the cheapest in the world. No people understand the economy of machinery better than the Americans, or carry out the principle of dispensing with or abridging human labour so fully in practice as they do; steam is, with them, the right arm of enterprize, and is everywhere seen lending its aid to productive industry on the most limited, as well as on the most extended, scale of operation. I found *Chenopodium glaucum* growing in the dockyard, on moist spots near the water, and on a large piece of waste ground at the end of Fourth Street; this is, I believe, a rare species in America, and probably of comparatively recent introduction, as the botanists of that country, and even of Philadelphia, seem very little or not at all acquainted with it. Four other species of the same genus, *C. album, ambrosioides, anthelminticum,* and *botryoides* are found in waste places in and around the city, besides a fifth, allied to our *C. urbicum,* but certainly distinct from that and *C. rubrum,* for which last, I believe, it passes here, and to which I am desirous of drawing the attention of American botanists, as being probably a nondescript. The plant has much resemblance to *C. anthelminticum* in its inflorescence, but is quite destitute of the strong smell of that species, and it resembles *C. urbicum* in the slender, erect, somewhat branched, nearly naked racemes, that bear a few small leaves amongst the lower clusters only. It is more branched and spreading than either of the two, or, indeed, than in any of the upright forms of the European *C. rubrum* that have come under my notice, which it was pronounced to be (I am sure erroneously) by some botanists of the town to whom I showed it at a meeting of the Horticultural Society of Philadelphia. The only specimens I collected for examination, picked at the entrance to the wharves and woodyards of Kensington, where it occurs frequently, are in the hands of my valued friend, John Carey, Esq. of New York, in whose instructive society I spent many most agreeable hours when in that city, and which I shall ever regret untoward circumstances should have debarred me from again enjoying on my return thither. I requested this gentleman, whose zeal and labours in the cause of botany are well known, both in his native and adopted country, to examine the species, which I have not seen in fruit, the plant having quite disappeared when I sought it again for that purpose in the November following.

At eight, P.M., I accompanied Mr. James to the monthly evening (promenade) meeting of the Pennsylvania Horticultural Society, held in a room of noble dimensions, in a building known as the Chinese Saloon, at the corner of Ninth and George Streets. The meeting, which was highly interesting, was numerously attended, and the show of flowers, plants, fruit, and vegetables, very respectable and tastefully displayed, whilst from this, as not being one of the Society's great exhibitions, it might be safely inferred that on the latter occasions, a rich treat would be afforded to those interested in horticultural science.

August 18th. Set off at seven, A.M., with Mr. James, on a botanizing excursion to Quaker Bridge, a spot in the Pine Barrens of New Jersey, remarkable for the number of scarce or local plants there congregated. We crossed the Delaware to Camden, a populous village on the Jersey shore opposite the city, where we had engaged a kind of four-wheeled vehicle, called here a waggon, but in its extreme lightness of construction and general arrangement, much resembling the "Rockaway" before described, being, like that, adapted for ploughing a passage through deep sand and mud, or surmounting an occasional stump or fallen tree with as much safety and expedition, as these very usual impediments in a traveller's way in this country will allow of its doing. *Chenopodium murale* grew near our starting point at Camden, an apparently uncommon plant in America, and perhaps introduced. I remarked it, however, in some plenty under walls at the Castle gardens in New York, and very commonly about Norfolk, Virginia, corresponding exactly with specimens from the Isle of Wight. Taking the road through Long-a-Coming, we struck across an intricate tract of forest ground, intersected with swamps, and about three, P.M., reached Batsto, a small village in the heart of the Pine Barrens.

(*To be continued.*)

On CONFERVA ÆGAGROPILA, *Linn.* By the REV. T. SALWAY.

The Royal Gardens of Kew are indebted for some fine living specimens of the curious aquatic, *Conferva ægagropila*, (Globe-Conferva, or Moss-Balls,) found in some northern fresh-water lakes, to Mrs. Stackhouse of Acton Scott, Shrewsbury. This lady has been very successful, if I may so say, in cultivating it. She has had them for nine or ten years: they have grown and increased, as it would appear, from detached portions of the old balls which become loose and fall to pieces. They are found in a lake near Ellesmere, in Shropshire, and have flourished in a pond of nearly stagnant water at Acton Scott, where the water is rather hard than soft. At Ellesmere they roll about the gravelly bed of the lake, and are blown on shore in storms.

Wishing to obtain still further information respecting the growth and mode of increase of *Conferva ægagropila*, that lady most obligingly sent me the following letter, addressed to her by the Rev. T. Salway:—

"The lake in which I found them, Culmere Mere, is so far from me, that it was quite a day's journey to go there and back; so that I never reached it but once. It is also difficult of access, for it is private property; and the boat on the lake is always kept locked up, and you cannot have the use of it without applying to the owner, who lives some miles from the lake; and without a boat you cannot get the *Conferva*, on account of the edges of the lake being inclosed with the *Arundo Phragmites*, and other tall growing water plants. Upon enquiry of the man who kept the boat, I found that the *Conferva* was principally found at the east end of the lake, where a very tiny rill of water runs, or rather *oozes* into the lake, and which, I believe, is quite dried up in hot weather. It is a mere land-spring, and there is no outlet from the lake. I mention this circumstance to show that the sphericity of the plant cannot arise from the action of *running* water. I detected the plant in water varying from a few inches to about two feet in depth. I was informed that they are seldom found in deep water. I do not remember seeing any very young specimens: what I observed were from about the size of a wallnut to that of the largest orange; some grew much larger than this. All the *perfect* specimens, whether young or old, were reposing quietly at the bottom of the water; the old specimens, which were *hollow* in the centre, were the only ones that were floating. These were very tender and broke to pieces, except with very careful handling; as soon as they rise to the surface, being driven about on the surface of the lake, they probably soon fall to pieces. My own impression is that the young ones arise from such parts of the old ones as still retain vitality, shooting out afresh as soon as they become detached from the old plants, and the filaments sending out new ones at each articulation. Some grow into a spherical form, and becoming solid, sink to the bottom, where they enlarge by annual accretions, until the centre, by degrees, begins to decay, and the plant becomes hollow. It then rises to the surface, is broken by the wind and waves, and the process recommences. Such is the impression I derived from the observations I was able make when at the lake. I have often wished I was nearer the habitat of the plant, that I might watch it closely from time to time, which alone would enable any one to arrive at an accurate result. There are several analogous cases amongst the Fungi and Lichens, where plants increase annually by fresh zones. In the Lichens the centre of such plants gradually decays, and leaves only a wider circle of the two or three last zones. In these, of course, the vitality of the plant can only exert itself in one *plane* (the surface of the stone, or tile on which it grows), and therefore never can become spherical. In some of the Fungi, again, as in the dimidiate *Thelephoræ* and *Polypori*, we see instances of plants increasing by annual layers, and in the latter, especially, acquiring an approximation to a spherical form. The *nearest* analogy to the *Conferva* is, perhaps, the *Sphæria concentrica*. Now all these plants, from the necessity of the case, can only be semi-spherical, the surface on which they grow preventing a complete sphericity; but the *Conferva*, not being attached to anything, and finding an equal degree of nutriment from the water on every side, acquires, I apprehend, very soon, the peculiar form in which we find it. I am sorry I have nothing more to communicate to you than the impression derived from a single visit to the locality (though I was there for an hour or two making all the observations I could), and which I have no doubt a closer scrutiny, repeated at different seasons, would have enabled me to render more correct. It was with a view of being able oftener to observe the plant that I sent some specimens to the pool at the lodge; but my poor brother's death has placed that locality even more out of my reach than Culmere Mere, nor do I know whether the plants still exist there.

"T. SALWAY."

THIBETIAN BARLEY.

The Agro-Horticultural Society of Bombay have been so obliging as to send overland to the Royal Gardens of Kew, a package of a kind of Barley with naked seed (that is, of which the grain separates from the husk, in thrashing, as does that of wheat), under the name of "*Thibet Barley, Hordeum cæleste*:" a sort much esteemed in the north of India. *Hordeum cæleste* is, however, a name given to a var. of the common *two-ranked Barley* (*H. vulgare*), with naked seed, differing in no respect from it, except in that peculiar property of the seed. Since no ears have come with this Barley, one cannot speak with certainty respecting it; but from its locality, I have reason to believe it to be a Barley, having a most remarkable structure in the awns, (so remarkable as to form the subject of a future botanical notice in the present Journal, from the pen of the Rev. Professor Henslow), *Hordeum Himalayense*. Our valued friend, Dr. Wallich, first directed public attention to this in his edition of Roxburgh's Flora Indica; where, on the authority of Captain W. S. Webb, surveyor at Kamoun, he speaks of it as the "*Oo-a*" of the natives, not known in the lowlands of India, and producing the hardiest of all grains, as well as the most nourishing, as the lusty Tartars live almost exclusively upon this and Tea (*brick-tea*). "The grain, cleaned from the husk," Mr. Webb remarks, "resembles no kind of Barley that I am acquainted with, and from its many good qualities and endurance of cold, it is likely to be a valuable acquisition to the Highlands of Scotland." Seeds of this curious Barley have been sent formerly to Europe, and we possess specimens in our Herbarium, raised in Scotland some twelve or thirteen years ago; but I am not aware that any attempt was made to cultivate it upon a large scale, or to ascertain its value for malting, or otherwise, in an agricultural point of view. The majority of this package from Bombay having been sent to the Royal Agricultural Society of London for distribution, we are quite sure the enlightened members of that valuable institution will put their grain to the test of experiment.—ED.

Brief Notices of Plants from SIR GEORGE SIMPSON'S *Journey round the World.*

"On the banks of the Grand Quête river, near Fort Colville, (Oregon Territory,) many large trees were observed lying felled, the cutting down of which must, from their enormous size, have been attended with prodigious labour. We were at a loss to account for this expenditure of toil, as the trunks had not obstructed the track; but we afterwards learned, from the Indians, that their object was to strip from the branches a *Moss*, having the appearance of horse-hair (probably the Lichen, *Alectoria jubata*), which they use as food. By boiling it for three days and nights, this moss is reduced to a white and tasteless pulp; and in that state it is eaten with the *Kammas*, a root somewhat like an Onion. To the unsavoury mess is sometimes added an insipid, or rather nauseous cake, made of *Hips* and *Haws*. Such is the principal, if not the only, sustenance of these (the Pende Oreille) Indians at the present season (July).

"The *Kammas* (*Camassia esculenta*, Lindl.) deserves a more particular notice, though, unlike an Onion, it has little or no flavour. It grows in swampy ground, and when its blue flower has produced seed, the root is dug up by the women with a stick about two feet long and a handle across the top, and is thrown into the basket slung at their backs. As the plant is abundant, each poor creature generally collects about a peck a day. The *Kammas* is placed over a gentle fire, in the open air, and it ferments, after about two days and nights, into a black substance, having somewhat the flavour of Liquorice. After being pounded in a trough, this stuff is formed into cakes, which, when thoroughly baked, are stowed away in baskets for winter-stock. After all this preparation, the *Kammas* is but a poor and nauseous article of diet. These people, (the Pende Oreille and Kootonais Indians,) may soon, however, have something much better. In one of their lodges we were surprised to observe several baskets of Potatoes, and they showed us two patches of ground where these had been produced. The seed and implements had been supplied from Fort Colville.

"On the banks of the Walla-walla river, the dreary plains of sand which stretch for miles, presenting in autumn no vegetation but *Wormwood* and *Prickly Pear*, nor inhabitants but the Rattle-snake and Prairie-bird, are said to be clothed in spring with fine verdure, which the improvident Snake-Indians, as if expressly to aggravate the withering effect of summer, are used annually to set on fire, in order to dry the seeds of the *Helianthus,* which is part of their provender against winter.

"The Bishop and Priests of the Mission of Santa Barbara presented us with a curious pile, shaped like a bee-hive, and made of the seeds of a *Pine,* all baked and ready for eating: it was meant as a specimen of the food and the ingenuity of the native Californians."—(Can the seeds be those of the 'Nut Pine,' of Frémont's Report of an Exploring Expedition through North California, &c., the *Pinus monophylla,* Torr. and Frém., frequently eaten in the mountains, as those of the Stone Pine are in Italy, and the Chili Pine in South America?—Ed.)

NOTICES OF BOOKS.

Journal of the Indian Archipelago *and* Eastern Asia. Singapore, 1847.

We hail with extreme pleasure the appearance of a scientific and literary Journal on the glorious countries above-mentioned, and we trust it will meet with that encouragement it so richly deserves, if we may judge from the nature of the articles in the six numbers (including a supplementary one to No. 5.) now before us. The first part commences with a Preface, exhibiting the want of a publication of the sort: then follow a Prospectus and plan of the Journal. The first Memoir is one that will be read with deep interest for its graphic delineations of scenery, and the mass of information brought within the compass of twenty pages: "*On the present condition of the Indian Archipelago.*" This, we presume, is by the Editor, whose name, we regret, is not given; for the name of such a writer could not fail to impart confidence in the character of the Journal. Some extracts, bearing upon the Natural History and features of the Malay Archipelago, shall appear in an early number of our present volume. Our chief object now is to direct attention to the memoirs bearing on Botany:—such we trust will increase with the advance of the publication;—and here we have, in the first number, a most important paper "*on the Gutta Percha plant,*" which now excites so much interest in Europe. It is written by Thomas Oxley, Esq., A.B., senior surgeon of the settlement of Prince of Wales Island, Singapore, and Malacca, and contains a full history of the plant, and of the properties of the gum. The botanical description is very faithful; but the author, without being able to consult books or any Herbarium, has not ventured to give a generic and specific name, which has been done in the fifth volume of our Journal, from specimens sent by Mr. Oxley himself. We shall make ample use of this paper in a further notice of the uses and properties of the plant, which we are preparing.

No. 2. contains "*Some contributions to the Natural History of the Rafflesia Patma,*" by M. Zollinger: a "*Note on Gutta Percha,*" by Dr. D'Almeida, who claims to be the first to make it known in Europe: "*A case of poisoning by Mushrooms,*" apparently an Agaric, species unknown, but in common use in Singapore. We trust well-dried specimens will be sent to Europe for determination.

In No. 4., under the article entitled "*Temminck's General Review of the Dutch Possessions in the Indian Archipelago,*" are some valuable notices relating to Rice, Coffee, Sugar, Indigo, Cinnamon, Cochineal, Cloves, Pepper, Tobacco, Tea, Cotton, Forests, &c.; and lastly, in No. 5, under an account of "*The Orang Binua of Johore,*" at the southern extremity of the Malay peninsula, we have a good deal of curious information on the vegetable products, especially respecting the *Durian* groves and *Durian* feasts, and on the "*Taban* (to which the name of *Gutta Percha*, a gum yielded by a different tree, is erroneously applied by Europeans)."* We presume that the *Gutta Percha* of Singapore is here meant; and, if so, the consumers in Europe will be glad to know, that, spite of the destruction of trees, occasioned by the reckless mode of collecting the juice, the "Binua" (people of the country,) who for some time past have been withdrawn, by the demand for it, from their usual pursuits, smiled at our author's ignorance in suggesting the probability of its being exterminated. "It is only trees arrived at their full growth (sixty to eighty feet high), or at least at a very considerable age, that repay the labour of felling them and extracting the *gitta*; while those of all inferior sizes, which they are compelled to leave, will keep up the race."

---

* Such are the words of the author of this paper, to which the editor adds in a note: "It is time that an endeavour should be made to avoid these mistakes, for we might, with as much truth and propriety, call an apple a pear."—We only wish that travellers, who are able to detect these errors, would help us to correct them; which they

---

Descriptions et Figures des PLANTES NOUVELLES ET RARES DU JARDIN BOTANIQUE *de l'Université de Leyde, par* W. H. DE VRIESE.

The indefatigable and talented De Vriese proposes to publish a volume in five livraisons folio, under the above title, beautifully coloured, at the price of seven florins each livraison. The first of them is announced as having appeared, with the five following plates. 1, *Ficus fulva,* Reinw.; *Zamia muricata,* Willd.; 3, *Encephalartus Altensteinii,* Lehm.; 4, Ditto, mas.; 5, *Planche contenant les analyses.*

might easily do, only by sending us well-dried specimens, as, indeed, Mr. Oxley has done of the so-called *Gutta Percha* of Singapore; and we can now say with confidence that the *Gutta Percha* of Singapore, whether the provincial name be correct or not, is the *Isonandra Gutta* figured and described in the sixth volume of the London Journal of Botany, p. 331 & 463, t. 17. But we are completely adrift respecting the *Taban.* Is it the *Gutta* (or *Gittah*) *Percha* of Singapore, described by Mr. Oxley? for it is more than probable that several analogous substances have been called *Gutta Percha,* that of Borneo, for example, which is considerably different from that of Singapore, at least in appearance. In our first notice of Gutta Percha, mention is made of *Jintawan* as being used mixed with the Gutta Percha, to give it flexibility. This *Jintawan,* we are informed by Mr. Brockedon, is a kind of Caoutchouc, and is probably, like the other Caoutchouc of commerce, yielded by different plants We are sure the Journal of the Indian Archipelago will do its best to solve our difficulties.

Prodromus Monographiæ FICUUM; *scripsit* F. A. G. MIQUEL, Botanices Professor Amstelodamensis.

(*Continued from page* 116.)

(*Ficus*; *Caprificus*; *Tenorea* Gasp. l. c.; *Erythrogyne*, Vis. in Gasp. op. cit.; *Plagiostigma*, Zuccar.)

V. FICUS, *Linn*, excl. spec.

Flores in *receptaculis* axillaribus geminis vel solitariis pedunculatis vel sessilibus pyriformibus vel globosis aut globoso-stipitatis basi bracteis 3 (verticillatis vel totidem pluribusve sparsis) instructis *monoici*, *polygamo-monoici*, vel *dioici*, bracteolati sessiles vel pedicellati. *Perigonium* (vulgo hyalinum raro fuscescens) 4–6-phyllum, phyllis raro paucioribus. *Masc. stamina* 1–6, perigonii laciniis opposita, *filamentis* plerumque brevibus, *antheris* bilocularibus ovatis vel raro reniformibus, loculis connectivo dilatato haud prominulo adnatis. *Fem. Ovarium* gynophoro brevi vel nullo, uni- (rarissime bi-) loculare, *stylo* laterali, *stigmate* inæqualiter bicruri vel oblique unicruri centro excavato vel perforato aut capitellato. *Achenia* globosa vel angulosa, *pericarpio* sicco tenuissimo, raro pulposo, *seminis testa* crustacea, *embryone* in centro albuminis carnosi aut tenuioris incurvo homotropo, radicula elongata.

Arbores vel *frutices* erecti vel repentes, in *Europa australi*, *Africa*, majore numero in *Asia calidiore* et *insulis maris Indici*, et *magni oceani meridionalis* crescentes, *foliis* alternis, rarissime oppositis, integris vel lobatis, serratis, dentatis, vel et integerrimis, pubescentibus vulgo scabris vel asperis, quandoque glabris sed tunc vulgo punctis siliciferis provectiore ætate inspersis vel rigescentibus, costato-venosis, *receptaculis* forma variis, quandoque in eadem stirpe *di-* vel *tri- morphis*, plerumque pubescentibus, scabriusculis vel asperiusculis, quandoque hispidis, basi plus minus constrictis, subinde in longum stipitem attenuatis, *bracteis* parvis 3 verticillatis vel aliquibus in stipite aut in ipso receptaculo sparsis, ore prominente vel deplanato bracteis pluribus erectis vel incumbentibus plerumque pilosis instructo. *Bracteolæ* parvæ hyalinæ in plurimis ciliatæ. *Perigonii pedicellus* et *phylla* hyalina, sæpe obliqua, haud raro ciliata, in paucioribus fuscescentia, glabra. *Stigmatis forma* pro varia ætate sæpe mirum in modum diversa.

Observatio. Genus, quale nunc propono, amplis limitibus circumscriptum, species numerosas habitu sæpe dissimiles includit, quod autem si in singula genera divellere velles, in complura genera characteribus, me judice, nimis artificialibus distinguenda, esset dividendum. Habitu, foliorum forma et pubescentia, *Covelliæ* analogum, receptaculorum autem forma et floribus distinctissimum.

§ 1. *Caricoides.* Ficus Gasparr. Ricerche, p. 76. tab. V. et VI.)

Receptacula plerumque feminea, raro androgyna, semper sterilia, alia serotina æstiva feminea seminifera. *Perigonia masc.* plerumque pentaphylla, *stamina* 1–5, *filamentis* dilatatis margine membranaceo confuso, *antheræ* loculis connectivo dilatato antice adnatis. *Perig. fem.* plerumque conforme. *Pistillum* in *receptaculis serotinis* ovario uniloculari, stylo laterali, stigmate bicruri, in *præcocibus* sive *grossis* ovario sæpissime biloculari, stylo centrali.

Ficus Carica femina Linn. et *auct.* plures species cultas et sylvestres longamque varietatum copiam includit, ab hortulanis diu distinctas, a *cl. Gasparrini* nuper botanice definitas, characteribus l. c. propositis.

1. *Ficus leucocarpa Gasp.* p. 77.—In muris vetustis et rupium fissuris prope *Neapolin.* Culta non mutatur (Fico trojano). Hujus varr; *b,* grossis subrotundis (Fico albo Galles. Pomol. ital.); *c,* unifera (F. pissoluto Gall.)

2. *Ficus Dottata Gasp. l. c.* (F. dottato Hortor.) Prope *Neapolin.*

3. *Ficus Colombræ Gasp. l. c.* (F. colombro) Sylvestris nondum reperta.

4. *Ficus polymorpha Gasp. l. c.* Abunde prope *Neapolin.* (F. chiajese incol.)

a, Juliana (F. præcox, Gasp. in Gass. flor. Sic. Syn. vol. ii. p. 880. Fico lugliatico vel lugliavolo); *b,* bifera (Fico Sampiero); *c,* Sarnensis (Fico Sarnese); *d,* depressa (Fico brogiotto); *e,* melano carpa (Fico barbanera) — et alia Fico petroneiano; *f,* elegans (F. vezzozo Galles); *g,* hematocarpa (F. melo grano).

5. *Ficus pachycarpa Gasp. l. c.* p. 78. (F. macrocarpa ejusd. in Gass. l. c.) Fico lardaro Gasp. Ric. tab. V.; *a,* fasciata (F. limone vel Zigarello); *b,* nobilis (F. regina Galles.); *c.* lusitanica. (F. portoghese Galles.)

6. *Ficus deliciosa Gasp. l. c.* (F. paradiso); *b,* castanea (F. datto Galles.); *c,* latifolia (F. monæco ejusd.); *d,* maxima (F. cervone apud Neapolin; F. asinino in Apulia).

7. *Ficus hypoleuca Gasp.* p. 79. (F. verdeccio Galles.)

His *Gasparrinii* speciebus forsan aliæ in aliis regionibus recognoscendæ addendæ.

§ 2. *Caprificus* (Caprificus Gasp. nov. gen. p. 6. et Ric. p. 79. tab. I–III.) Ficus Carica androgyna, Linn.

Receptacula pedunculata, *præcocia* et *æstiva* (grossi et forniti) androgyna, *serotina* (cratiri) plerumque feminea. *Perigonium masc.* plerumque pentaphyllum, *stamina* 3–5, *filamentis* cylindraceis, *antheris* subreniformibus introrsis bilocularibus. *Perigonium fem.* plerumque 3-phyllum, *ovario* plerumque sessili uniloculari, *stigmate* bifido vel abortu simplici. *Albumen* tenue. Reliqua uti in § 1.

"Est Caprificus veterum sive F. Carica androgyna Linn. et aliorum, quæ a Ficu vera mihi differre videtur [quoad genus scil.], quod amphanthi tria genera profert, eaque semper insectifera, præter æstiva (forniti) quæ simul insectifera et seminifera; ovarium semper uniloculare, nonnunquam gynophoro suffultum; perigonium fl. fem. 3-phyllum, præsertim ob formam filamenti, connectivi et antheræ." Gasp.

8. *Ficus albescens.* (*Caprificus leucocarpa, Gasp. l. c. p.* 80. *Tab. II–III.*) Ramis annotinis lævibus glabriusculis, foliis palmato-5-lobis, receptaculis lævibus turbinatis, grossis fornitisque maturitate albescentibus, cratiris subviolaceis.

a. pachycarpa, grossis maximis subsessilibus maturitate tenerrimis, pulpa subdulci tenera fere eduli. *Erinosyce ? Ponted.*

b. viridis, receptaculis minoribus, grossis subrotundis pedunculatis, cortice e viridi albo, foliorum lobis obtusis.

9. *Ficus neapolitana.* (*Caprif. insectifera b. neapolit. Gasp. Nov. gen. Cap. oblongata, Gasp. l. c. p.* 20.) Ramis annotinis

scabriusculis, foliis palmato-3-lobis, grossis lævibus oblongis, maturitate e viridi subviolaceis. Vulgo *Profico chiajese.*

10. *Ficus rugosa.* (*Caprificus rug. Gasp. l. c.*) Ramis annotinis villosis, foliis palmato-5-lobis crassiusculis, grossis turbinatis maximis rugosis, maturitate subviolaceis, cratiris depressis vel rotundatis. Vulgo *Profico viceinto.*

11. *Ficus chlorocarpa.* (*Caprif. gigantea, Gasp. l. c. Tab. I.*) Foliis palmato-3–5-lobis, crassis lævibus, grossis turbinatis subsessilibus lævibus, maturitate e viridi violaceis, cratiris oblongis viridibus.

"Hæc caprificus (quæ una cum *C. rugosa* præ cæteris insectifera est) primo intuitu a reliquis dignoscitur tum cratiris viridibus, tum, præter characteres allatos, trunco elato ramosissimo. Ejus rami tandem glabri; antheræ in grossis majusculæ, subrecurvæ, filamento crasso ac brevi longiores; perigonii laciniæ ex basi ovata in apicem subulatum attenuatæ, aut lineari-oblongæ, concavæ, filamento æquales vel longiores, sed nunquam antheras excedentes." *Gasp.*

12. *Ficus globosa.* (*Capr. Sphærocarpa, Gasp. l. c.*) Grossis rotundis lævibus, cortice obscure virenti, pulpa subviolacea, foliis palmato-5-lobis.

13. *Ficus pedunculata.* (*Capr. ped. Gasp. l. c.*) Grossis longe pedunculatis, turbinatis, rugosis, foliis profunde palmato-5-lobis partitisque, lobis angustis.

Omnes hæ § 2. sp. a *Gasp.* circa *Neapolin* sponte provenientes observatæ sunt.

14. *Ficus ludens, Miq. in Flor. Nigrit.*

HAB. *S. Antonio, Cape de Verds,* m. Jun, 1841. (Th. Vogel!)

15. *Ficus caricoides Roxb. Flor. Ind. l. c. p.* 529. *Wight Icon. Plant. Vol. II. Tab.* 634. Subarborea, foliis ovatis acutis basi leviter cordatis crenatis integris vel trilobis tomentosis trinerviis, receptaculis axillaribus solitariis vel geminis pedunculatis trigono-turbinatis subvillosulis, basi bracteis 3 involucratis.

HAB. *Lucknow,* a D. Martin in H. Calcutt. introducta. Neckeri (Hb. Hook.!) Conf. porro Roxb. l. c. et iconem. Certe species distincta. Perigonium fem. 5–6-phyllum; stigma bicrure.

16. *Ficus? Hunteri.* (Ficus palmata Roxb. l. c. p. 529, haud Forsk.) Foliis palmatis subtus tomentosis lobis cuspidatis serrulato-dentatis.

HAB. *Pulo Pinang* (Dr. H. Hunter). Reliqua ignorantur.

17. *Ficus simplicissima, Lour. Fl. Cochinch. Vol. II. p.* 667.

HAB. in Sylvis Cochinchinæ.

§ 3. *Ficus genuinæ.* Folia plus minus cordata serrata lobata vel integra. Receptacula gemina vel solitaria pedunculata basi constricta 3-bracteata.

a. Folia lobata.

18. *Ficus geraniifolia*, n. sp. Ramis glabris lævibus nascentibus tenere puberulis, foliis breviter petiolatis circumscriptione subcordatis 5-lobis et dentato-serratis, lobo superiore tri- vel subquinquelobo, lateralibus plerumque bilobis, infimis integris, supra punctato-asperrimis, subtus reticulatis præter nervos majores lævigatos scabro-hirtellis, stipulis parvis ovatis subacuminatis subglabris convolutis, receptaculis axillaribus solitariis? pedunculatis, pedunculo petiolum multoties superante obovato-subglobosis pedunculoque subpuberulis basi tribracteatis.

HAB. In *Persia Australi.* (Aucher Eloy! n. 1318, in Hb. Hook.) Species distinctissima. *Folia* 2½–4 cent. longa. *Stipulæ* 4 mm., pedunculi sursum incrassati 1–1½, *receptacula* 1 cent. longa, hinc pallida, hinc fuscescentia, tenuiter striata.

19. *Ficus palmata Forsk. Arab. p.* 179. *Vahl. Symb. I. p.* 84. *Tab.* 24. *Enum. II. p.* 201. Ramis lævibus, foliis modice petiolatis ovatis obtusiusculis, basi subcordatis vel truncatis, integris vel trilobis, grossiuscule serratis, junioribus utrinque pubescentibus, adultis punctato-asperis, subtus piloso-scabriusculis trinerviis et venoso-costulatis, stipulis ovatis acuminatis subglabris, receptaculis axillaribus brevissime pedunculatis solitariis obovatis vel pyriformibus basi in stipitem attenuatis bi-tri-bracteatis, glabriusculis.

HAB. *Arabia* (Forsk.), in valle *Sinai* (Auch. Eloy! n. 2788), in regno *Mascate Djebel Okador* (id. n. 1327!).

20. *Ficus Pseudo-Carica, n. sp.* Ramis teretibus glabris lævi-

gatis, nascentibus petiolis pedunculis tenere puberulis, foliis circumscriptione obovato-acuminatis, basi lata concava, trilobis vel lobis lateralibus aut uno eorum profunde sinuatis, subquinquelobis, lobo medio acuminato, lateralibus acutis, omnibus præsertim extrorsum conferte serratis, tri-vel subquinquenerviis et venoso-costulatis, supra nascentibus pilosulis adultis scabris, subtus præsertim in nervis scabro-hirtellis, stipulis lanceolatis puberulis, receptaculis axillaribus geminis pedunculatis globosis scabriuscule puberulis, basi breviter stipitata bracteis tribus subconnatis.

Hab. ad rivos prope *Adoam*, 1 Jun, 1837 ; nomen Abyss. *Bellas* (Schimp. I. n. 157 !)

Petioli 1½–2½, *folia* 9–11 cent. longa, basi 4, supra medium 8 cent. longa. *Pedunculi* 5–10 mm., *receptacula* 1 cent. in diam.

21. *Ficus toxicaria* (*Linn. Mant. p.* 305. *Vahl. Enum. II. p.* 202. F. *padana, Burm. Fl. Ind. p.* 226. F. *toxica, Thunb. diss. n.* 27 ubi fusior descriptio.

Hab. in *Sumatræ agro padano.*

An F. *caricoidi* affinis?

22. *Ficus repens* (*Willd. sp. IV. p.* 1149. *Roxb. Fl. Ind. III. p.* 535). *Wight Icon.* 636 (eximia). F. *repens* et F. *rufescens, Hamilt. MSS.*, et F. *repens* α et β *in Linn. Soc. Transact. Vol. XV. p.* 144.

Hab. In pascuis locisque humidis prope *Calcuttam* (Roxb.), *Assam* (Wall.! Hb. Hook.)

Species distinctissima, ab auctoribus tamen cum F. *heterophylla*, aliisque confusa.

Obs. In. *Collect Wallich.*, F. *repens* et F. *heterophylla* sub eodem numero obveniunt, quo factum est, ut synonyma, præeunte *Roxb.* in *Fl. Ind.*, ad F. *heteroph.* relata, ab auctoribus, v. c. a. *Steudelio* ad F. *repentem* perperam sunt relegata. In *Hb. Hook. Spec.* fol. 3–5-lobis, incisis alioquin haud diversa.

23. *Ficus assamica*, n. sp. Repens, caulibus lævigatis, petiolis tenuibus elongatis patentim pilosis glabrescentibus, foliis circumscriptione ovato-triangularibus acutiusculis basi plerumque æquali cordatis, inæqualiter dentatis semitrilobis trilobisque, sinu uno vulgo profundiore, supra scabriusculis, subtus molliter pubescentibus, stipulis parvis linearibus, receptaculis axillaribus soli-

tariis pedunculatis clavato-pyriformibus in stipitem longum tenuem pedunculo longiorem attenuatis, ore attenuatis, basi tribracteatis cum pedunculo puberulis.

Hab. In planitiebus *Assamiæ* (Hb. Hook.! sub F. heterophylla). An a præcedente satis diversa? *Petioli* 4–6, *folia* 8–10 cent. longa, pauca integra et quinqueloba, reliqua tri- vel semitriloba. *Pedunculi* 1½–2, *receptacula* cum stipite 2–2½ cent. longa.

24. *Ficus serrata, Forsk. Arab. p.* 179. *Vahl Symb. bot. I. p.* 83. *Enum. II. p.* 202. Foliis oblongis indivisis palmatisque repando-dentatis scabris, fructibus pedunculatis globosis villosis scaberrimis.

Hab. *Arabia* (Forsk.). A me non visa.

25. *Ficus cannabina Loureir. Fl. Cochinch. II. p.* 668. Foliis caulinis hastatis incisis rameis ovato lanceolatis, caule suberecto.

Hab. *Cochinchina* (Lour.). Cum F. *heterophyllo* a quibusdam conjuncta, distinguenda tamen videtur.

26. *Ficus morifolia Vahl. Enum. II. p.* 203. Foliis tripartitis scaberrimis, laciniis lanceolatis subpinnatifido-angulatis.

Hab. In *India orientali* (Vahl. l. c.). Conf. fusiorem auctoris descriptionem. De recept. tacet. An forma F. *heterophyllæ*?

27. *Ficus acutiloba, n. sp.* Ramulis puberulis adultis glabris lævibus fuscescentibus, foliis modice petiolatis ovato-oblongis 3–5-lobis, basi obtusa trinerviis, lobis ellipticis vel lanceolatis acutis denticulatis, lateralibus erecto-patulis, medio longiore quandoque subsinuato vel grosse dentato, utrinque præsertim subtus scabro-hirtellis asperulisque, receptaculis axillaribus solitariis pedunculatis pyriformi-globosis basi tribracteatis. (Tab. V. A.)

Hab. *Bombay,* Assam, (Hb. Hook.!) *Petioli* ½, *folia* 8 cent. longa. F. repenti et F. heterophyllæ affinis. Conf. Tab. VII. A.; *b,* Folia integra.

Tab. V. A., Ficus acutiloba, Miq. n. m.—*a* et *b,* fl fem.; *c,* stigma; *d, e,* pistilla: *a. m.*

28. *Ficus Pseudo-Sycomorus Decaisne in Flor. Sinaic.* Ramis fuscescentibus lævibus glabris, foliis modice petiolatis ovato-cordatis acutis vel obtusis grosse et obtusiuscule dentato-serratis trinerviis et costulatis subcoriaceis supra punctato-asperrimis versus margines et præsertim subtus scabro-puberulis reticula-

tisque, receptaculis axillaribus solitariis brevissime pedunculatis basi involucro tripartito sustentis obovatis puberulis glabratis et scabriusculis.

Hab. ad montem *Sinai* loco *Nakeb Hane,* 29. Apr. (Schimper! Unio. It. n. 162.); desertum *Sinai* (Bové n. 204!).

Teste *cl. Bové* 12–15 pedalis, arabice *Hamad,* sequenti me judice forsan nimis affinis, notis propositis tamen provisorie distinguenda, præsertim receptaculis brevissime pedunculatis.

29. *Ficus virgata, Roxb. Fl. Ind. III. p.* 530. *Wight Icon. II. Tab.* 649. Foliis modice vel longiuscule petiolatis lato-ovatis acutis vel acutiusculis basi lata integra vel utrinque unidentata truncatis vel leviter concavatis, serratis membranaceis vel subcoriaceis, supra scabris, subtus incano-tomentoso-pubescentibus ætate sensim glabratis, trinerviis et costulatis, receptaculis axillaribus plerumque solitariis rarius geminis longiuscule pedunculatis pyriformibus basi involucro tripartito, cum pedunculo incano pubescentibus.

Hab. *Rohilcund* (Roxb.), *Maradabad* et in *reg. bor. Ind. or.* (Hb. Hook.!), Hort. bot. Calcutt. (Wall. List. n. 4492!), *Affghanistan* (Griffith!).

Specimina ex *reg. borealibus Indiæ.* Statura magis compacta, foliis brevius petiolatis et minoribus, receptaculis brevius pedunculatis et magis globosis ad F. *Pseudo-sycomorum* accedunt.

30. *Ficus urticæfolia, Roxb. Fl. Ind. III. p.* 553. a me non visa, ab auctore nimis breviter descripta; inquirenda, an forma præcedentis.

"A native of the mountains north of Bengal." (Roxb.)

31. *Ficus rotundifolia, Roxb. l. c. p.* 554, cum præcedenti crescens, simili ratione dubia adhuc.

§ 4. *Sycidium. Folia* oblonga integra vel raro lobata, serrata vel integerrima, scabra vel glabra, *receptacula* axillaria pedunculata gemina et solitaria.

a. *Scabræ,* receptacula demum subglobosa, bracteis ad basin verticellatis vel sparsis; folia serrata vel serrulata aut repanda, raro integerrima plerisque integra.

32. *Ficus humilis, Roxb. Fl. Ind. III. p.* 535. *Wight. Icon. II. Tab.* 635. (F. ampullacea, Wight, MSS. Ficus repens, Hort. Miss. teste Wight.) Ramis glabris lævibus, ramulis petiolis foliisque nascentibus subtus puberulis, his dissitis longiuscule petiolatis ovato-oblongis vel ellipticis æquilateris subabrupte obtusiuscule breviter acuminatis, basi lata æquali rotundatis vel subcordatis, præsertim versus apicem serrato-repandis, trinerviis et utrinque 5–6-costulatis supra sub-lævibus, subtus pallidis scabriusculis, receptaculis axillaribus plerumque geminis obovato-ampullaceis in stipitem hic illic bracteatum constrictis, scabriusculis, junioribus ore hiante.

HAB. *Sumatra* (Roxb.); culta in Hort. Miss.

Ramuli fuscescentes. *Petioli* scabri vel scabriusculi 1½–4, *folia* 11–18 cent. longa, 6–9 lata, subtus serius subscrobiculata et juxta imam basin glandulosa. *Receptacula* nunc ½ cent. æquantia pedunculo subbreviora; pedunculi bracteæ sparsæ vel rarius in medio subverticillatæ.

33. *Ficus scabrella, Roxb. Fl. Ind. III. p.* 532. *Wight Icon. II. Tab.* 661. Differt præsertim foliis brevius petiolatis magis serrato-dentatis basi acutiusculis, receptaculis solitariis obovatis basi bracteatis.

HAB. *Chittagong* (Roxb.) Affinis videtur F. heterophyllæ.

34. *Ficus biglandulosa.* (F. exasperata, Roxb. Fl. Ind. III. p. 555. Wight Icon. II. Tab. 664; haud Vahl.)

HAB. *Indiæ regiones orient.* (Roxb.) Affinis videtur F. *asperrimæ.*

35. *Ficus hispidissima,* Wight, MSS. (Ficus Ampelos, *Burm.* F. politoria, *Lour.* ab am. Heyne in Hb. W. Arnott.) Ramis asperulis, ramulis fuscescentibus scabro-puberulis et asperis, foliis alternis et suboppositis modice petiolatis ellipticis vel ovato-ellipticis breviter vel longiuscule acuminatis præter basin subintegerrimam junioribus serrato-dentatis adultis crenato-repandis, trinerviis et utrinque circiter 4-costatis, subtus subscabro-pubescentibus vel molliter tomentellis pallidis, supra scaberrimo-puberulis, receptaculis plerumque solitariis axillaribus globosis pedunculatis pubescentibus, ore bracteis linearibus suberectis subbiserialibus circumdato, pedunculo sparse bracteolato.

HAB. *Ind. or.*, *Shewgherry-hills* (Wight in Hb. Arn. !)

F. asperrimæ proxima; foliorum forma, receptaculique pedunculo sparse bracteolato distinguenda. *Petioli* 1–1½ cent. longi hispido-pubescentes; *folia* 7–11 cent. longa, 1½–5½ lata, senescentia sensim magis integerrima.

36. *Ficus politoria, Lam. Encycl. II. p.* 500. *Vahl. Enum. II. p.* 191.

HAB. In *Ind. or.* (?), *Madagascaria* (auct. cit.)

37. *Ficus asperrima, Roxb. Fl. Ind. III. p.* 554. *Wight. Icon. Tab.* 633. *Teregam Rheed. III. Tab.* 60. *Ficus racemosa, Linn. quoad syn.* Ramis denique lævigatis, foliis alternis et oppositis oblongis acuminatis, basi obtusis, sursum remote denticulatis, rigidis, supra petioloque verrucis pilisque brevibus scabro-asperrimis, subtus fusco-vel glauco-tomentoso pubescentibus dein scabridis, trinerviis et utrinque 3–4-costatis, receptaculis axillaribus pedunculatis globosis scabro-incano-pubescentibus, bracteis 3 ad receptaculi basin inque pedunculo sparsis.

HAB. In vallibus *Malabariæ* et *Circars* (Roxb. l. c.), ad *Bombay* (Herb. Hook. ! a Lambert comm.)

A *Ficu politoria* diversa, sed ex descriptione similis. *Rami* adulti lævigati subverrucosi, juniores pilis brevibus rigidis scabri, quibus deciduis basi cava verrucæformi relicta asperis. *Petioli* 1–2 cent. longi antice canaliculati cauli appressi, scaberrimi. *Folia* crassa rigida, in sicco fragilia, supra saturate viridia pilis sub lente albis brevibus subconicis scabra iisque deciduis asperrima, subtus tomentoso-pubescentia et subscrobiculato-reticulata, nervo costisque prominentibus, nervo utrinque e basi ad ½ alt. pertingente, costis oppositis vel alternis patule adscendentibus. *Pedunculi* ½ cent. longi scaberrimi; *bracteæ* varie dispositæ, vulgo ad basin receptaculi una et in pedunculo duæ sparsæ, aliquando in medio pedunculo duæ oppositæ, vel 3 ad basin receptaculi membranaceæ ovatæ puberulæ. *Receptacula* magnitudine minoris cerasi, ore subhiante *bracteis* pluribus erecto-patulis instructo. Nostra a *sp. Roxb.* foliis angustioribus diversa. *Formæ* exstant foll. oblongis acuminatis in *Hb. Wight!* Ad *Marum Thiney*.

38. *Ficus exasperata Vahl Enum. II. p.* 197, *haud Roxb.*

HAB. *Guinea* (Isert apud Vahl.), *Senegambia* (Brunner! in Hb. Hook.)

39. *Ficus asperifolia, Miq. in Fl. Nigrit.*

HAB. Guinea; Niger-Expedit. (Vogel. n. 74! m. Aug. 1841.)

40. *Ficus heterophylla, Linn. Suppl. p.* 442; *Roxb. Fl. Ind. l. c. p.* 532; *Wight Icon. Vol. II. Tab.* 659. *haud Lamarck.* (*Valli Tegegam Rheede H. Mal. III. p.* 62. satis quadrat, et minus apte a Vahl ad F. rufescentem relata. "F. repens, Roxb. Herb." Wallich. n. 4475. D. partim; Roxb. opinante huc etiam F. cannabina, Loureir. Fl. Coch. II. p. 668, F. rufescens, Vahl Enum. II. p. 203. (F. heterophylla, Lam. Encycl. II. p. 499), F. denticulata, Vahl. l. c. p. 202, F. truncata, Vahl. p. 201, F. serrata, Forsk. Vahl. p. 202, F. aquatica, Willd. referendæ; attamen species Forsk. receptaculis villosis, et Loureireana "pedunculis longis," distinguendæ videntur.) Tota aspero-scabra, foliis alternis breviter petiolatis rigide membranaceis supra læte viridibus asperulis, subtus (cinerascentibus) scabro-asperis, oblongis acutis, basi acutis inæqualiter subexcitis, serratis, integris, semitrilobis trilobis vel sinnato-subpinnatifidis, polymorphis, ramulis, petiolis pedunculis scabro-pubescentibus, receptaculis axillaribus solitariis raro geminis, turbinato globosis.

Species locis humidis *Ind. or.* contin. vulgaris.

Petioli $\frac{1}{2}$–$\frac{2}{3}$-cent. longi. *Folia* 7–8 longa, 3–4 lata trinervia et utrinque 4-costulata. *Pedunculi* petiolum circiter æquantes; *receptacula* aspero-scabra, dein lævigata, ore bracteis 5 circiter vel et pluribus occlusa.

41. *Ficus elongata,* n. sp. Ramis glabris sublævibus, foliis alternis modice petiolatis membranaceis utrinque præsertim in nervis petioloque subpuberulis cito glabratis et aspero-scabriusculis, subtus albicanti-pallidis, elongato-lanceatis æquilateris acutis, basi leviter inæquali rotundatis vel emarginatis trinerviis et utrinque 5–6-costulatis parceque reticulatis, receptaculis axillaribus geminis vel solitariis pedunculatis obovato-globosis subpu-

berulis sensim glabratis basi constrictis bracteisque 3 vel involucro tripartito.

HAB. *Ind. or.* (Wight!) Præcedenti certe proxima. *Petioli* 1–2, *folia* 11–14 cent. longa, 3½–4½ lata.

42 *Ficus quercifolia, Roxb. Fl. Ind. Tom. III. p.* 534. *Wight Icon. Tab.* 646. (F. denticulata, Ham. in Soc. Linn. Transact. vol. xv. p. 145 ?.

HAB. *Sumatra* (Roxb.) Vidi sp. cult. in Hb. Hook. et in Hort. Amstelæd. satis congruum.

43. *Ficus inconstans,* n. sp. Ramulis petiolis pedunculis receptaculis foliisque subtus sparsissime pilosulis scabris, his supra glabris et læviusculis membranaceis obovatis vel obovato-oblongis breviter obtuso-acuminatis rotundato-obtusis, basi obtusis, sursum denticulato-repandis, aliis integris, aliis prope apicem trilobo-sinuatis vel sinuato-dentatis subtriplinerviis et utrinque 4–5-costulatis subtus venuloso-reticulatis, receptaculis axillaribus breviter pedunculatis solitariis vel geminis subglobosis.

HAB. In *Java* (Zolling. n. 496 !) *Folia* 9–14 cent. longa, 5–7 lata.

44. *Ficus sinuosa,* n. sp. Aspero-scaberrima, foliis alternis vel suboppositis breviter petiolatis lato-oblongis abrupte acute acuminatis, basi lata subtruncatis, plerumque inæquilateris, serratis, integris vel varie dentato-sinuatis, supra asperrimo-punctatis, subtus in nervis, petiolo, pedunculis receptaculis scaberrimis, trinerviis et utrinque 3–4-costulatis, rigide membranaceis, subtus pallidis punctulatisque, receptaculis axillaribus solitariis vel geminis breviter pedunculatis ovato-globosis basi bracteatis.

HAB. *Ins. Philippinas* (Cuming, n. 1921 !)

Folia 8–15 cent. longa, 4–5 lata.

Var. integrifolia, ibid. (Cum. n. 1924 !)

45. *Ficus javensis,* n. sp. ((?) F. Ampelos, Lam. ex Moritzio l. c). Tota punctato-asperrima petiolis, pedunculis foliisque utrinque præsertim subtus in nervis puberulo-scabris, his breviter petiolatis elliptico-oblongis plerumque inæquilateris, longe abrupte acute acuminatis, basi integerrima subcuneatis, cæterum grossius-

cule dentato-serratis, integris vel parce sinuato-incisis, supra saturate viridibus, subtus pallidis, receptaculis axillaribus, vel ad axillas defoliatas geminis vel conglomeratis pedunculatis subglobosis asperiusculis, apice prominulo bracteatis.

Hab. In *Java* (Zolling. n. 926 !)

Folia 8–12 cent. longa, 3–4 lata.

Var. subcrenata (conf. cum F. cuspidata et F. rostrata, Blum. Bijdrag.); foliis subobovato-oblongis modice subabrupte acuminatis, crenulato-repandis. An species?

Hab. *Java* (Zolling. n. 946 !)

46. *Ficus acuminatissima*, n. sp. Ramulis junioribus petiolisque dense hirtello-pubescentibus, ramis adultis lævibus, foliis subsessilibus membranaceis oblique lanceolato-oblongis vel lanceolatis, basi acutiuscula leviter inæquali-subemarginatis, longissime et acutissime acuminatis, utrinque in nervo medio subtusque in venulis parce pilosulis asperiusculisque, versus apicem remote subdenticulato-repandis, tenuiter trinerviis venulisque costalibus utrinque 6–8, receptaculis axillaribus et lateralibus solitariis et confertis breviter pedunculatis subglobosis et setuloso-hirtis.

Hab. *Insul. Philippinas* (Cuming, n. 1928 !)

Folia 12–16 cent. longa, 3½–5 lata; acumen 3 cent. æquans.

47. *Ficus Lobbii*, n. sp. Ramis lævibus, ramulis petiolis foliisque subtus in nervo medio puberulis, adultis asperiusculis, foliis alternis breviter petiolatis anguste oblongis, longe angusteque acuminatis, basi inæquali obtusiusculis, integerrimis vel versus apicem serrulato-repandis, receptaculis axillaribus aggregatis globosis basi in stipitem longiusculum constrictis nascentibus puberulis, mox glabris et sublævibus.

Hab. In *Java* (Lobb! in Hb. Hook.)

Petioli fere ½, *folia* 10–12 cent. longa, 3½–4 lata. *Recept.* pisi magn., stipite ima basi parva bractea instructo.

Num huc *Cum. n.* 1926, petiolis longioribus diversa?

48. *Ficus polycarpa, Roxb. Fl. Ind. III. p.* 556. *Wight Icon. Tab.* 632.—*haud Jacq.* (F. copiosa, Steud. Nomencl.)

Ex ins. *Moluccis* in *Hort. Calcutt.* introducta. Huc pertinet

Cuming ex *ins. Philipp.* n. 1934, quæ omnino congruit, exceptis receptaculis (adhuc junioribus) globoso-urceolatis piso minoribus.

49. *Ficus montana, Burm. Fl. Ind. p.* 226.

HAB. In *Ind. orient.* (Kleinhof). Ex brevissima phrasi non determinenda, in Herb. Lessertiano tantum extricanda.

50. *Ficus difformis, Lam. Encycl. II.* p. 500.

HAB. In *Ins. Philippinis.* A me non visa, cum F. *sinuosa* comparanda.

51. *Ficus Wassa, Roxb. Fl. Ind. III.* p. 539. *Wight Icon. Tab.* 666. Ex ins. *Moluccis* in *H. Calcutt.* introducta.

52. *Ficus ulmifolia, Lam.* l. c. p. 499.

HAB. in *ins. Philippinis* (Lam.), *Java* (Commers. in Hb. Juss. teste Vahl Enum. II. p. 197). Prope *F. inconstantem* et *F. Javensem* pertinere videtur. Num huc eadem quæ in H. berol. colitur et a cl. *Kunth* descripta est in *Ind. Sem.* 1846. p. 21, qui *F. scabram, H. berol. nec Willd.*, et *F. coronatam, Colla, Hort. Ripul. Tab.* 8, *Hort. Paris,* 1846, *nec Roxb. huc ducit.*

53. *Ficus asperiuscula, Kth. et Bouché in Ind. Sem. H. berol.* 1846, p. 21. (F. grewiæfolia, H. berol. 1846, nec Blume.) "Ramulis flexuosis teretibus, petiolis gemmisque terminalibus hirtellis, his conico-subulatis; foliis breviter petiolatis, oblongo-lanceolatis, acuminatis, basi, dimidiato-rotundatis trinerviis, obsolete et remote denticulatis, nervis primariis remotis costaque subtus prominentibus, rigidulo-membranaceis, subrugulosis, epunctatis, supra scabris opacis, subtus subtilissime hirtellis; stipulis marcescendo-persistentibus; receptaculis axillaribus, geminis, longiuscule pedunculatis, pyriformi-globosis, hirtellis."

HAB. (?) verosim. in *Ind. or.*

Folia 6–7½-pollicaria, 21–26 lin. lata. *Petioli* 2–2½ lin. longi. *Recept.* magn. pisi.

54. *Ficus scabra, Forst. Fl. ins. Austr.* p. 76. *Vahl Enum. II.* p. 183. (ubi charact. fusiores.)

HAB. In *Ins. Tanna, Namaka* (Forst.)

55. *Ficus grossularioides, Burm. Fl. Ind.* p. 227, excl. var. *β.* quæ est F. heterophylla.

Hab. In *India orient. Suratta.* Num *F. asperrima, Roxb.* (?)

56. *Ficus sinuata, Thunb. Fic.* p. 12. n. 22, cum fusiore descriptione. *India orient.*

57. *Ficus Fraseri,* n. sp. Ramis vetustioribus lævibus, cæterum asperrima, foliis oppositis et alternis modice petiolatis rigidis utrinque verruculis pilisque brevibus aspero-scaberrimis, ellipticis vel obovato-ellipticis, versus basin paulo attenuatis, plerisque supra medium trilobo-sinuatis, sinubus obtusis, lobis latis ovatis acutiusculis, medio fere ovato obtuso-apiculato, aliis fere integris, omnibus subintegerrimis marginibus leviter revolutis, nervis e basi 3, costulisque paucis subtus reticulatis. . . . . .

Hab. In *Nova Hollandia,* ad *fl. Brisbane.* (Fraser n. 154! in Hb. Hook.)

Folia 6–11 cent. longa, 3–5 lata, aliquando fere 5-lobo-sinuata.

58. *Ficus Cumingii,* n. sp. Ramulis petiolis pedunculis junioribus foliisque subtus in nervo medio appresse scabro-hirtellis, receptaculis foliisque subtus pilis albis brevibus deciduis scabris dein asperis, foliis oppositis et alternis breviter petiolatis lanceolatis attenuato-acuminatis, acumine obtusiusculo, serratis, basi æquali rotundata, in aliis integra, in aliis uni- vel bi-auriculata subpandurata, patule costulatis, costulis ante marginem arcuato-junctis, receptaculis axillaribus solitariis vel geminis breviter pedunculatis subglobosis asperis, ore prominulo minute pluribracteatis, basi bracteis 3.

Hab. *Ins. Philippinas.* (Cuming, n. 1925!)

Petioli 2–4 mm., *folia* 6–12 cent. longa, 1–2½ lata. *Receptacula* piso paulo majora.

59. *Ficus subpanduræformis,* n. sp. Scabriusculo-puberula, foliis alternis breviter petiolatis supra basin panduræformem longe lanceolatis subintegerrimis trinerviis et patule costiveniis, nascentibus, ramulis pedunculis et receptaculis junioribus scabro-puberulis et subtiliter punctulatis, receptaculis axillaribus solitariis pedunculatis obovato-globosis basi bracteatis.

Hab. *Assam.* (Hb. Hook. n. 558!)

Petioli 1–1½, *folia* 12–16 cent. longa, basi æquali rotundata, 3–4 lata.

Forma asperifolii, pilis rigidis conico-curvatis in ipsis marginibus etiam dispositis. E. C. T. (Timor?) Hb. Hook.

60. *Ficus* (?) *prominens, Wall. List.* n. 4537. Foliis oppositis et alternis, (?) modice petiolatis lato-ellipticis vel oblongis basi rotundatis crenato-serratis, trinerviis et utrinque 4-costulatis supra scabris et asperis, subtus reticulatis et dense pubescentibus dein subscabris, receptaculis.

Hab. Montes *Prome* (Wall.). Specimen mancum. An *Covelliæ*, sp.?

Folia 10–15 cent. longa.

61. *Ficus antithetophylla, Steud. in Schimp. Fl. Abyss. Sect. II.* n. 866. (Ficus caprææfolia Delil. in Ann. d. Sc. Nat.) Ramulis petiolis pedunculisque hirtellis, foliis alternis versus ramulorum apices suboppositis breviter petiolatis lanceolato- vel spathulato-oblongis apice rotundatis vel attenuato-obtusatis integerrimis vel vix apice subrepandis, utrinque aspero-punctulatis, subtus lutescentibus junioribus in nervo medio pilosulis, venulis utrinque circiter 6, stipulis densius persistentibus lanceolatis scariosis, receptaculis axillaribus solitariis pedunculatis subglobosis costulatisque scabro-punctulatis, basi involucro parvo irregulariter 3-lobo, ore bracteis plurimis membranaceis imbricatis ciliolatis. (Tab. V. B.)

Hab. ad ripas fluminis Tacazze, 28 Maji, 1840 (*Schimper*! l.c.)

Frutex, *ramis* cylindricis lævibus glabris foliorum cicatricibus tuberculatum; ramuli pube molli brevi pilis longioribus intermixtis. *Petioli* $\frac{1}{3}$–$\frac{1}{2}$, *folia* 4–5 cent. longa, $1\frac{1}{2}$– fere 2 lata. *Receptacula* ceraso paulo minora.

Tab. V. *B.*, Ficus antithetophylla, Steud. Ramulus cum recept. *n. m.*; *a*, Flores plures, diversi sexus et variæ magnitudinis: *a. m.*; *b*, fl. masc. cum pistillo nano: *a. m.*; *c*, fl. masc.; *d*, stamen: *a. m.*; *e*, *f*, fl masc. sub anthesi et cum achenio fere maturo.

(*To be continued.*)

BOTANICAL INFORMATION.

Extracts from the private letters of Dr. Hooker, *written during a Botanical Mission to* India.

[The object of this Mission has been already stated, as fully as its nature will allow, in the sixth volume of the *London Journal of Botany*. It will suffice here to remark, that Dr. Hooker, at the recommendation of the Chief Commissioner of H.M. Woods and Forests, &c., has been appointed by H.M. Government to investigate the vegetable productions of certain portions of India, particularly the mountainous regions of Himalä. He is afterwards to proceed to Borneo, with a similar object in view. That the public may be in possession of some particulars relating to Dr. Hooker's progress and success, previous to the fuller narrative which will appear on his return, is the Editor's object in publishing the following extracts from the necessarily hastily written and familiar letters addressed to his friends at home.

The First Lord of the Admiralty, with the consent of His Excellency Lord Dalhousie, the newly appointed Governor General of the East Indies, kindly granted a passage to Alexandria, in H.M. Steam-Frigate "Sidon," destined to convey his Lordship to that place, *en route* for Calcutta. From Suez, our traveller formed part of Lord D.'s suite; and it is not a little gratifying to the writer of this notice to reflect, that, as he was himself indebted to the late Countess Dalhousie for a rich Herbarium of East Indian and Himalayan plants, collected by her when accompanying her noble husband then Commander-in-Chief, on his official tours; so will Dr. Hooker owe still greater obligations to the son of that distinguished lady, for the amplest means of prosecuting his botanical researches in the East.—Ed.]

I. Overland route to Calcutta.

H.M. Steam Frigate "Sidon," off Gibraltar,
Nov. 20th, 1847.

The Rock of Gibraltar is a truly noble object, whether in Nature or Art, and worthy of a much longer visit than we were able to make to it. But I must first speak of Lisbon and the "Golden Tagus," in both of which objects, however, I was grievously disappointed. The former, like almost every object in Portugal, *looks best from a distance.* Its long rows of white-washed houses show filthy on a near approach; and the magnificent palaces of the old nobility are sinking, like their owners, to decay. Civil war has brought poverty in its train. In all the shops splendid jewellery and fine plate are offered at prices infinitely below their value, for money is not to be had. The streets are generally steep, and with hardly any exceptions very narrow: a few consist of houses eight or ten stories high; and here and there you come upon public gardens, enclosed with handsome and lofty railings. The suburbs are very extensive, and they swarm with wretched beggars and herds of quarrelsome dogs, alike annoying to the stranger. I saw no good trees near Lisbon, only *Olives, Evergreen Oaks, Orange, Pomegranate,* and the great *Datura.* We made an excursion to Cintra, fourteen miles distant, and losing our road, wandered among the low, rounded and bare hills, among which the Tagus winds its way. I was not sorry for the mistake and delay, for they enabled me to see more of the country. Vegetation was most scanty; the plants were all but burnt up, a few *Euphorbias, Genistas,* and *Bupleura,* some *Astragali,* and an unsightly *Centaurea,* alone remaining. In a village, to which we wandered and whence we were directed to the right path four or five miles distant, the scenery was prettier, for I saw water, green grass, groves of *Olives, Vineyards,* and scattered woods of *Oak.* Here and there were white convents with gay gardens round them. The hills showed a few *Stone-Pines,* bent by the winds, and in the bottom of the valley grew *Weeping Willows* and *Arundo Phragmites* (?). The agriculture is most slovenly, and the fields are enclosed with rough stone walls: the roads are not much better of their kind, being rugged and dusty, and adorned, at every mile or so, with the pile of stones and a cross, of which I need not explain the meaning. The only objects which struck me as curious and peculiar, are the windmills. Without having seen a Spanish or Portuguese windmill (they are alike), it is difficult to understand Don Quixote's adventure: they are low and equipped with very broad sails, which, when set in motion, make the most extraordinary, hideous, howling noise, like the voice of a wild beast, which is heard half a mile off—a truly unearthly sound!

Our excursion to Cintra, however, gratified me, because of the scenery, where woods, castles, and convents, contrast pleasingly with the saw-edged (serrated) *Sierra*, its summits wrapped in the clouds, which rise from the adjacent Atlantic Ocean. The plain was covered with low bushes of *Genista* and *Ulex*, all out of flower; but many *Orchideæ* had pushed their shining green leaves above the soil. The coolness and verdure of the hills contrasted agreeably with the scorching plains, and we enjoyed our ascent through avenues of *Cork-Oak* and *Ilex*, which lined the road. Many points reminded me of Madera, but not to the advantage of Portugal. The rocks are by no means so fine, and Cintra lacks the luxuriant growth of *Fuchsias*, *Geraniums* and *China Roses*, which adorn every cottage in Madera. *Chestnuts*, too, are few; and I noticed no large trees of any kind. The rocks were, however, grey and green with *Lichens* and *Mosses*; while, here and there, grew *Cotyledon Umbilicus*, *Grammitis Ceterach* and *Adiantum*—all plants, characteristic of a western European vegetation.

Whilst the rest of the party, mounted on donkeys, visited the convent of Nossa Senhora das Penas (Our Lady of the Rocks), I climbed the rocky hills above the village of Cintra. I was rewarded with a splendid view, which comprehended the buildings below, the groves of *Chestnut*, *Oak*, *Cork*, *Lemon*, *Orange*, and *Pomegranate*, and many miles of the grassy undulating plains of Portugal, where I distinctly saw the lines of Torres Vedras, Mafra, and other places of scarcely less note in the Peninsular war, described by Napier. The sea is visible in two directions, as well as the widened Tagus above Lisbon. I was surprised at finding so much mist and cloud, at such a comparatively low elevation, about 2,000 feet, and at first I thought it must be accidental; but the multitude of *Lichens* which coated the granite rocks, as thickly, though not with such fine species, as in the

Antarctic Islands, afforded convincing proof of the prevalent humidity of the atmosphere, which is due to the vicinity of the Atlantic and the isolation of the heights which intercept the moist vapours. The *Cork-Oaks* were also hoary with *Ramalina* and *Evernia*, and some *Mosses*, mixed with amazing quantities of *Polypodium vulgare*; these trees reminded me of the Apple-trees in Normandy, wanting, however, the Misseltoe.

This Portugal is an almost desolate and comparatively uninhabited land, not so much from the faults of the Government as the character of the people. Often have I wondered how it came to pass, that a nation once so famous, and from whom sprung the precursors of discovery in both worlds, should have fallen so suddenly and so low. But it was GOLD alone that roused their energies: the Portuguese are naturally dirty, indolent, and immoral. It is hard to say what will become of them. The land is rich and productive, the climate delicious, and the people do not possess that warlike and romantic temperament which continually causes their neighbours, the Spaniards, to be in hot water. I have seen the Portuguese in Madera, the Cape de Verds, Brazil, and now at home, and they are alike everywhere, and I never wish to come in their way again.

To return to the rocky hill I was climbing, it was very barren, except of *Lichens*, and dwarf bushes of *Quercus, Ilex Suber* and *coccifer*, some shrubby *Labiatæ*, a few *Linariæ*, and such-like herbs. The autumn sun had scorched everything; but little shoots might be seen sprouting forth, indicating an early spring. Part of the hill is terraced for the use of the inmates of the Palace, and planted with multitudes of *Geraniums*, but little else. The top is a pile of huge granite blocks, capped with a small turreted castle, built apparently for ornament. After we had partaken of a fine dinner, provided by Lord Dalhousie, we returned to Lisbon, galloping all the way; for the little Spanish horses refused to make any halt, except at an hotel situated close to the place where the aqueduct from Cintra to Lisbon crosses the road. It must be allowed that the Portuguese excel in aqueducts; both this and the one I had seen at Rio are very noble structures. At the part where we arrived, fourteen tall arches, each about one hundred feet high, spanned a broad valley, and their projection against the blue star-lit sky had a fine effect. An echo here produced fourteen distinct reverberations; not from the fourteen arches, I expect, but from the air striking upon different parts of the one beneath which we passed.

I regretted not returning to Lisbon by the way we had left it, for I wanted to look again at the church of Belem, where Columbus dreamed that an angel directed him to the discovery of the New World; and where Vasco de Gama and his successors offered up, some their prayers, and others thanksgivings (to Saint Nicholas, by the way,) on the occasion of their voyages to, or return from, the East Indies.

The part of Lisbon to which we returned looked magnificent by night. Grand squares with piles of white buildings, six and eight stories high, glanced bright in the moon-beams, and so did the broad streets of palace-like houses, faced with gardens and gilded palisades. The heat of the day was over; the evil smells of the city were somewhat dissipated; the dogs had gone to kennel; and a few drunken sailors were the only disturbers of the peace. We were rather late for the Opera, which is vaunted, by those who know no better, as one of the largest and best in Europe. The house is certainly enormous; but the orchestra is very poor, the opera (Lucrezia Borgia) was ill performed, both as to acting, singing, and stage effect; and worst of all, the boxes, pit, and gallery were filthy alike, and the whole place so noisome, that I found it impossible to sit out the piece, and I slipped away quickly and returned to the "Sidon." The following morning we sailed for Gibraltar, whence I now write.

Altogether, Lisbon and its environs disappointed me; though there were parts of the city on which I gazed with deep interest. The historical associations are numerous, and of a kind peculiarly striking to me. There is the port, whence sailed the discoverers of the greater part of India and of the passage thither, by the Cape of Good Hope. The very church and convent, where public prayers were offered by Vasco de Gama and his brave associates, are not only still standing, but are proudly pointed out by the inhabitants. Many curious remains of Moorish architecture exist in different parts of the city: heavy buildings of white limestone or marble, with long, high doors, and arches that expand above the middle and then taper upwards to a point. The lower stories of these edifices are generally handsome, their floors and walls of marble; but they, and indeed the entire city, wear such an air of dilapidation, and the customs of the people are so horribly filthy, that it is a penance, instead of a pleasure, to perambulate the streets. Gilded columns and porticos, and gay painting, do not compensate for the practice of throwing out every kind of dirt and offal before the doors.

It took us two days to sail from Lisbon to the entrance of the Mediterranean Sea. A strong current carried us on, with the shores of Europe and Africa on either hand, that of Africa being the loftiest, from the range of the Lesser Atlas, which runs along the kingdom of Morocco. Rounding Tarifâ Point, we opened the Bay and Rock of Gibraltar, the former bounded everywhere by bare hills, save at the point where the noble fortress projects its bold front into the blue Mediterranean. Gibraltar Rock is a peninsula, running north and south: it terminates to the south in Europa Point, which descends in steps or ridges, whereon stand houses and gardens; while northward, the bluff cliff, upwards of a thousand feet high, looks back to Spain and shows its three rows of teeth to the mother country. By these rows of teeth, I mean the parallel galleries hewn in the face of the rock, like long caverns, furnished with ranges of cannons, which grimly project through holes in the sides of the cliff.

We lay off the New Mole and took in coals. Southward we looked over the Mediterranean to Apes' Hill, on the African coast. The view was enlivened with many of the little latteen-sailed boats which figure in all views of the Mediterranean, and are here called Rock-scorpions. We landed and walked to Europa Point, among barracks, soldiers, guns and sentries innumerable, and ascended the western face of the rock, which has a very steep slope of 45°, covered with a scrubby vegetation, consisting chiefly of *Dwarf*

Palms, a few *Agaves,* &c. From the top, a narrow ridge about 1400 feet high, we obtained a glorious prospect both of the Spanish and African coasts. The descent on the east is a sheer precipice down to the sea, all but perpendicular; and nothing grows, at least at this season, among the confused masses of limestone, of which it, in common with the rest of the rock, consists. On the west side, by which we ascended, I observed, besides the *Agave* and *Dwarf Fan-Palm,* an introduced *Aloe, Asparagus,* some *Labiatæ,* and a pretty species of *Arum.* The *Palmetto,* or *Dwarf Fan-Palm,* was to me the most interesting among this stinted vegetation; not merely because it is the only European Palm, but because it is the most northern species of the genus, as my old friend, the New Zealand *Palmetto,* is the most southern species known. Of the *Labiatæ* there were several kinds, but none either in flower or fruit. The *Phytolacca,*[*] for which I sought particularly, is not to be seen on the wild parts of the rock, but it grows, apparently cultivated, in the gardens about the town. It forms a very handsome, leafy, rounded and massy looking tree, with a stout trunk, and rather short spreading branches; and appears, specifically, the same as that which I observed in the Island of Ascension, where it grows with such wonderful rapidity. I had seen a solitary *Phytolacca* at Cintra, but did not then recognize it. To have obtained, as I much wished, a section of the stem, for the Museum at Kew, was impossible: the trees are jealously guarded by soldiers, and in the public gardens it is prohibited to touch and pluck a plant, as with you at Kew. If we had stayed longer at Gibraltar, (but after spending six hours on the rock we returned to the "Sidon,") I could easily have procured the *Phytolacca* from a private garden. Its general aspect reminds me of the

---

[*] *Phytolacca dioica,* an arborescent species of Poke-weed, native of Buenos Ayres, but introduced into Europe by the Spaniards and Portuguese. It is remarkable for the softness of its wood. "Il est," says M. Bory de St. Vincent, "un assez grand et fort bel arbre, dont le tronc cependant conserve une mollesse herbacée, telle qu'on peut le couper comme on ferait d'une enorme Carrotte; il a été des longtems transporté et forme à Seville une partie de la promenade publique le long du Guadalquivir, près le pont de Triana. A la forme des feuilles et à la hauteur de plusieurs individus, on dirait des Peupliers."—Ed.

Mango. If you have it not, in a living state, in the Royal Gardens, the Surgeon of this ship has kindly promised to procure it for you, on his way back to England.—[It has long been in the Royal Gardens of Kew.—Ed.]

At Malta, I mean to enquire about the *Cynomorium,* and, if possible, to visit its habitat, which is said to be on an insulated rock, sometimes impossible of access, about seventeen miles from the town of Valetta.

On board H.M. Steam Frigate, "Sidon,"
Off Valetta, Nov. 29th.

We have had splendid views of the Spanish coast since quitting Gibraltar: the glorious Sierra Nevada has been full in sight, its purple mountains, capped with snow, darting upwards into the bluest of all blue skies, and rising from the bluest of seas. The African shore was very unlike what I expected. Instead of a bare, sandy, hilly desert, we saw rugged ranges, clothed in the lower part with trees, and surmounted with the snow-sprinkled heights of the Lesser Atlas. Algiers, from a distance, looked a pleasant enough place to live in:—the town stands on a high and steep point, rising out of the sea, faced with formidable white batteries and castled fortifications, and dotted all round with wood-embosomed villas, probably the residences of the French conquerors.

The harbour of Valetta is magnificent. In our way to the coaling place, we passed the town of St. Elmo on one hand, and a noble building, the Naval Hospital, on the other. The shores are rather high, presenting terrace after terrace of batteries, crowned with castellated buildings, and within these again are houses and palaces, public and private, parades and arched arcades (called *Barracas*) on the heights, where the inhabitants seat themselves and look down upon the shipping below. In all directions you see rows of huge cannon in the foreground, or bluff escarpments, or long lines of masonry, enclosing piles of buildings, sprinkled with churches and convents, and bell-towers innumerable. The latter emit an incessant jangling: some of the bells have good voices and others very bad. Scarcely a trace of vegetation remains anywhere, except the Caper plant, which covers the rocks and walls; and were it not for the cool colouring of the Malta stone, the heat of this place must be frightful in summer. The rock is all a pale yellow magnesian limestone, so soft that it may be easily cut with a knife; but it hardens on exposure to the air and makes an excellent and durable masonry. The water is deep in the harbour, up to the very batteries and wharfs, intensely blue and swarming with boats of all sizes, and ships of all nations. Two English line-of-battle ships, three war-steamers, together with some frigates and smaller craft, were all of our fleet then lying at Malta, the greater part of it being elsewhere in the Mediterranean.

I landed in the forenoon and ascended into the town of Valetta, through archways and all kinds of mysterious fortifications abundantly garnished with images of the Virgin, stuck in niches of the walls. The streets are steep, and there are many flights of stairs, crowded with people buying and selling, in stalls and little shops, all open to view, and tenanted by some of the most industrious people I ever saw. The town looks like a fair, or rather a hive; everybody has something to do and goes about it in good humour; there is no jostling or quarrelling. The streets, which run along the crest of the hill whereon Valetta stands, are continued from one end to the other, and intersected at right angles by others, which strike across from the waters of one bay to that of the contiguous one. All are very narrow, but clean and strikingly picturesque; they are straight, and the majority of them are terminated by the water as a vista, with its intense and yet brilliant hue. They form, so to speak, a sort of square telescope, with busy crowds along the bottom, handsome yellow carved stone balconies, projecting on either side, a bright azure sky above, and the sea like a perfect sapphire-stone at the far extremity. Roberts' and Daniell's fine water-colour pictures of scenes in the East have a reminding similarity to Malta, especially in the buildings and the blue sky; but I hardly think that anywhere else is there so happy a combination as is produced by the hue of the Malta stone, the lovely Mediterranean, and the stirring bustle of the streets. As a balance to these recommendations, it must be owned that the place is very hot and dusty in summer, and in rainy weather muddy; still the mud is *clean mud,* and there are plenty of good horses and calèches to carry the stranger about.

The buildings all over the town of Valetta are truly noble, the majority of them having been erected by the Knights of Malta, and consisting either of the palaces of individuals, or public edifices belonging to that ancient community, with not a few *Auberges,* as the dwelling-houses of the different Nations of Knights are called. It seems strange that among so many grand structures there is not a single really fine church. I speak of their exterior, for many are gaudy enough within; but I should not have recognised even the church of St. John by its outward aspect. The church lately built by the English and founded by the Queen Dowager, is much the handsomest in Malta, and it is the only one which boasts of a spire. The Library, the Palace, and the Church of St. John are well worth a visit, though not fine of their kind; and I heard of some attractive "Lions," in the shape of convents, and bodies of monks preserved and exposed to view, but neither these, nor the catacombs, had I time to visit.

* * * * * *

Every part of the town is full of associations, but none so much so as the Governor's palace, the old residence of the Grand Masters of the Knights of St. John of Malta. It forms a large and handsome quadrangle in Valetta, with one suite of show-apartments, none very fine, but many highly interesting. The walls of the Hall and best apartments are covered with rude frescos of the deeds of the Knights, attributed to Bolognèse, who is said to have been brought over from Italy on purpose. The origin of the Knights, the siege of Ascalon, and the birth of St. John, are among the first of these. In another room are Richard Cœur de Lion receiving his mission and benediction from the Pope, the repairing the walls of Jerusalem, reception of the Emperor of Austria, siege of Damietta, King of Hungary receiving the grand-cross of the order (the only monarch to whom it was granted as an honorary distinction), the taking of Rhodes, and many other subjects with which you are more familiar than I am; or, if you are not, pray read the History of the Knights of Malta, and of the Crusaders, published in Constable's Miscellany, which we have at home,—both very interesting books. There are no remarkable ornaments or very fine rooms in the palace, and but little good marble. The rooms are so far modernized as to be suitable for an unwarlike Governor of Malta, and are often disfigured by atrocious copies of the old masters. There are a few interesting old paintings, as a portrait of L' Isle Adam, one of the oldest Grand-Masters, and especially that of the Grand-Master Vignacourt by Caravaggio, a black and much-disfigured picture, often copied. The Tapestry-chamber contains about twelve immense panels of Gobelins workmanship, apparently much superior to what is at Blenheim: they represent allegorically the Four Continents, Europe, Asia, Africa, and America. An Armoury is shewn as something wonderful, but it really is disappointing; 17,000 stand of muskets is not attractive, and there is little old armour of interest, except the coats of armour of L' Isle Adam, Valetta, who built the town, and of Vignacourt, being the original suit of steel inlaid with gold in which he is always represented. There are also two cannons, with Arabic inscriptions, said to be 550 years old.

The Church of Saint John, the only other remarkable building whose interior I saw, is externally very plain, but within overloaded with sculpture and carving: except the tombs of some of the old Grand-Masters, and some of the more valiant Knights, there were few objects of interest. Being built of soft limestone rock, the whole interior is most elaborately carved, and the surface picked out with gold and blue stars, flowers, &c. Frescos, in a bad style, adorn the ceiling and walls, together with some miserable paintings. One of the latter is ascribed to Andrea del Sarto, a Flagellation, which I had much difficulty in finding, and, when found, saw only a mass of blackened dirty canvas, strained all awry and torn across the lower half. The shrines were profusely ornamented with gold and silver utensils, altar-pieces, &c. Conspicuous in this, a Roman Catholic place of worship, stands a throne on the left of the grand altar, with the arms of England worked on it, and thus betraying its appropriation to our Queen, or her representative in Malta. After all, the street views and enormous proportion of nobly-faced buildings are the main attractions of Malta.

The harbour is always charming and enlivening, from the number of fruit-boats and the beauty of the surrounding waters, studded with white-sailed ships of all nations, from noble line-of-battle ships, smart frigates, and terrible-looking steamers, down to the gay pleasure-boats, and beautiful lateen-rigged vessels of the Mediterranean ports. Bands of music are playing all day long: they flock under the sterns of all vessels of high degree, such as the "Sidon," playing by turns, for a few coppers, the prettiest operatic airs, and remarkably well too. You are awakened in the morning by them, and in the evening again they re-assemble.

On Saturday morning I went on board the "Vengeance," to call on young Beaufort, the son of Admiral Beaufort, the Hydrographer, (who had come to Malta for health,) and I breakfasted with her Captain. We then went ashore, where I bought some carved stone for the Geological Museum. In this work the natives excel; and I procured a beautiful fluted pedestal, more than a yard high, with an elaborately sculptured vase of doves, ivy-leaves, and flowers, for twenty shillings. Afterwards we rode out into the country to the ancient capital, Medina, or Città Vecchia, as it is now called. The country is everywhere flat, and wofully barren, consisting of ledges of limestone rock, with scarcely any native vegetation, and here and there rudely ploughed and sown with wheat and vegetables. The number of churches is remarkable: in our six miles' ride I did not see fewer than ten or a dozen, all very large, and abounding inside with wax effigies of our Saviour and Saint Paul, rudely painted, and very frightful to behold. Every hamlet has its church; and any one of the latter would hold half the population of Malta. Stone-cutting and carving is indeed the besetting employment of the Maltese; and the facility afforded by the limestone has the same effect on this their hereditary disposition, that a soft deal bench has on a school-boy. At Città Vecchia there is little of note, but a huge church, some curious catacombs, and an extensive prospect of the island, which looks like a broad ledge of white rock, spotted with churches, and girt by the blue Mediterranean. Much sanctity is attached to the place, from the belief of the inhabitants that Saint Paul lived there, and for years inhabited the neighbouring caves (or holes), and preached daily from the hill. Everything is attributed to St. Paul, and our geological friends would have laughed had they had presented to them for sale (as to me) some fossil shark's teeth, three inches long, as the teeth of the Apostle himself! The people are, of course, grievously ignorant, but very obliging and good-natured, constantly begging, and troublesome from the importunity with which they offer their services. I made a few sketches of the curious-looking country; but it is too barren for beauty, and not extensive enough to be otherwise interesting.

In the evening we went to the Opera, which is an excellent one, and well-provided (for the size of the place) with performers. Don Pasquale was fairly executed, the *Prima Donna*, especially, both sang and acted creditably. Malestrato was miserable, and "Come è gentil," a total failure.

I enjoyed my stay in this island exceedingly, and was the more glad to have seen it, being tolerably familiar with our two other fortified rocks, St. Helena and Gibraltar.

Cairo, Dec. 7th, 1847.

On Sunday morning the "Sidon" sailed from Malta, and arrived at Alexandria on the following Saturday morning. The passage was long, owing to contrary winds and a head sea, which, though slight, were sufficient to retard the "Sidon," which, despite her size and terribly grand look, is a very indifferent steamer or sailer, after all. At Alexandria, we were very busy preparing to leave the ship the following day; but every time I went upon deck for a few minutes there was something strange to look at in the various costumes of the functionaries who came on board on visits of ceremony or of duty to the Governor-General or the ship. Turks, Greeks, Armenians, and Egyptians, with not a few Arabs, swarmed up and down, wearing turbans, Fez-caps, gold lace, rich scymetars with diamond hilts, heavy gold-embroidered shawls round their waists, and curious-looking foreign orders. It was always difficult to distinguish the servants from their masters, and the Dragoman or interpreter from both.

Alexandria is a ruinous city of dirty white houses, straggling round a broad bay, with nothing but its antiquities and associations to interest a stranger. Pompey's Pillar to the west of the harbour, and Cleopatra's Needle to the east, are conspicuous from the lowness of the coast before the land is visible from seaward. There are a few fine ships of Mehemet Ali's in the harbour, but he cannot man them; his palace is a large, tolerably well furnished, white square building, fronting the sea. Of trees there are scarcely any, except groves of *Date-Palms*, and a few *Acacias*; no herbs or shrubs, but in the wretched gardens. The soil is all limestone rubbish, blown about by the wind into your eyes, already sore with the glare of the sun. The outskirts are horrible, to a degree, consisting of clusters of huts, or rather mud hovels, grouped together in squares or quadrangles, not four feet high, each square about ten feet every way, with a hole for the door, and another to serve as a window. I went ashore about 2 P.M., and was at once besieged by crowds of donkey-boys, so closely that I had to use a stick to keep them off, till I selected one, and rode to Pompey's Pillar. It is certainly a very remarkable object, the shaft being one piece of granite; but like all such attempts at effect it is a failure, because the mind does not perceive at once the gigantic labour which the erection of such a single stone must have cost. Of this and Cleopatra's Needle I need say no more: they were exactly what I expected, neither more nor less, and any one can form a good conception of them, from reading the most ordinary account. I next went to the slave-market, and had to pay for admission into a small quadrangular court, about thirty feet square, surrounded with cells of about twelve feet, devoted to the slaves of each nation. These wretched holes were dark and dirty, and full of vermin, in spite of the smoke of a fire in the middle of the earthen floor, which all but suffocated the poor inmates. I saw only the Abyssinians, two or three squalid wretches, in a most abject state of filth, disease, and suffering from the smoke which inflamed their poor eyes. They said nothing, but crouched behind the door and up in the corner on my entering.

* * * * * *

All of us regretted leaving our kind hosts and friends on board the "Sidon," to most of whom we had already become much attached. Captain Henderson is one of the mildest and most gentlemanly of men: he, with six or eight of the officers, accompanied us to Cairo. Our route was on the Mahmoudie Canal, which communicates between Alexandria and the Nile, running east about eighty miles, and our conveyance was a little steamer, of the size, shape, &c., of a Woolwich boat: she is the property of the Transit office, for the conveyance of passengers, but devoted to us for the present. There was no comfort on board, and we were much crammed with Dragomen of all sizes and stamps, officials, luggage, &c. This canal was constructed by Mehemet Ali, who forced the Egyptians to work, without pay, or even bread or tools: 60,000 are said to have been starved to death; but we may hope this is exaggerated, being much above the number given in the hand-book of Egypt. All along, the banks are bare, or where you approach the lake Mareotis, rushy and reedy; except the *Tamarix* there are no bushes, and occasional *Dates* or *Acacias* are the only trees. The scenery reminded me of the canal through the bog of Allan, if you can suppose that wholly destitute of any vegetation, except around the very scattered Egyptian or Turkish houses, where are scantily furnished gardens of *Acacia, Cypress, Myrtle,* &c. At 10, A.M., we reached the Nile, descending to it through a lock: it rained tremendously, and we got very wet during the embarkation. Here we were received on board a very pretty steamer, of the size of a Greenock boat, very swift, and well-built and found: she is the pleasure yacht of Mehemet Ali, which he placed at our disposal. The after part was given up to Lord and Lady Dalhousie: it was gorgeously fitted with white shot satin, all worked with gold and scarlet flowers, heavy gilt and silver ornaments, Turkey carpets an inch thick, and everything in the most costly and splendid style, short of solid gold and jewels. Only Lord and Lady Dalhousie enjoyed this splendour, however, for we messed on deck; and the accommodations for the rest of us, including the prime minister of Egypt, were comparatively poor, and consisted of little cabins with sofas, and no washing appurtenances. We had to sleep two in each cabin, happily the weather was remarkably cold, and for washing we were sore put to, till we bethought ourselves of the tin cocked-hat boxes, which, opening through the middle, made two basins at once. Our repasts were sumptuous, served in the French fashion, and with French cookery, on silver and gold plate.

Next morning we were half-way to Cairo: the Nile looked a tame river, but association gave interest to its ordinary features. It was about as broad as the Thames at Kew, turbid and rapid, the stream flowing three miles an hour, bringing mud from Upper Abyssinia, the fabled Mountains of the Moon, Lake Dembir, and all the countries I used to read of, years ago, in Bruce's and Salt's travels. The banks are cliffs of mud, ten to twenty feet high, steep, and showing the successive layers of deposited soil, to which Egypt owes all its scanty store of vegetation. On these cliffs, or rather banks, we saw the Camel or lonely Dromedary stalking along, with his Arab master before, or upon him; the latter turbaned and clothed, as all our associations picture him to be. At other places we observed groups of tents, with camels and donkeys around, an *Acacia* or *Sycamore* on one side, and a *Palm* on the other; little scenes, wholly oriental, and as different from anything English as are those of the other countries I had visited, many thousand miles further from home. Beyond the immediate banks spread wide deserts of sand, wholly untenanted and uninhabitable, except by the wandering Arab. Here and there a little irrigation is attempted, by means of a broad wheel with many buckets attached to the whole circumference, and worked by a bullock. Of houses there were very few, and built near trees of *Palm* (*Date*), *Sycamore*, *Acacia Lebekh*, but no other that I could see. Boats were numerous, such as are figured in Bruce's Journey, and many subsequent ones, though I remember none so well. All have high sterns, with a sort of houses on them, and are full of men, women, and the products of the soil. Sometimes their tall yards are descried for miles inland, and even over the sand of the desert, when a fleet of them is on another branch of the Delta whose waters are out of sight.

At three, P.M., we had our first view of the Pyramids, on the right bank of the river. At this distance, about forty miles, they appear like little blue cones on the horizon, not large enough to be wonderful, as objects of art, nor small enough to escape observation altogether. The first view of Cairo is very grand, especially at sunset, when the sinking sun darts forth golden beams along the mysterious desert, lighting up the Pyramids, which appear in strong relief, and gilding the white hill that overtops Cairo, with its citadel, mosques, and larger buildings. The fertility of the banks of the Nile increased as we neared the city, the belt of verdure being itself very broad, and the wooded portion of it, on the immediate shores, becoming more dense. A few miles below the town are Mehemet Ali's country-gardens and palace of Shoobra, a very pretty but formally arranged spot, loaded with *Orange-Trees*, enclosed by clipped hedges of *Myrtle, Geranium, Hibiscus,* and other plants, disposed in figures amongst gravel walks.

* * * * * *

We arrived at Koolva, a place on the Nile a few miles below Cairo where Mehemet Ali had a palace prepared for us, about 5 o'clock in the afternoon. There the Governor-General landed, accompanied by those who must be with him, whilst I went on with a party of the officers to the city, in preference to being located so far off. At 9, we reached the landing-place, where the Pacha had carriages waiting to conduct us whither we pleased, the servants bearing lighted cressets. Our party consisted of two Lieutenants, Perrier, son of the Consul at Brest, and relative of J. W. Croker, Esq., and Porcher, who was with Capt. Blackwood in H.M.S. Fly; two Midshipmen, Mr. Calcraft, a relative of Lord

Dalhousie, and the Hon. Mr. Bridgeman, son of Lord Bridport; the Assistant-Surgeon of the "Sidon" (Russell); Mr. Chalmers, a Scotchman, and nephew of Capt. Henderson, who is on board the "Sidon" as an invalid, and another young gentleman. We went to the British hotel, kept by a Scotchman, to which Captain Henderson recommended us; but it is a wretched house as far as meals and attendance are concerned. The greater part of us took two-bedded rooms. As to the houses here, they are more like holes in quarries than anything else,—great white-washed crumbling stone edifices, smelling of mortar and plaster, when the sun is not strong enough to raise any worse odour. We were very tired, but, after supper, were tempted with pipes, and Syrian tobacco, with which we lounged on long divans, and looked very Oriental. Mosquitoes there were in plenty, and as they got inside our curtained beds, we had no choice but to smoke them out before lying down.

The first thing we did this morning was to visit the Turkish bath, a novelty to us, and greatly needed after our uncomfortable night's accommodation on board the little steamer. The morning was cold, only 68°, and we preferred walking to riding on jackasses, the universal mode of conveyance here. All the roads we travelled were suburban, and broad, with huge tumble-down houses on one side, and a row of *Acacia Lebekh* trees on the opposite, or odious narrow lanes of smaller buildings, rudely plastered and white-washed, with windows and balconies so projecting as almost to meet overhead. Pray look in Lane's edition of the Arabian Nights for admirable sketches of them; but imagine also the roads unpaved and dusty, the walls very dirty and dilapidated, and the wood-work of the pretty lattices unpainted, brown, and ricketty, like an old cane-bottomed chair. The charms of these Eastern houses are all ideal and in the abstract: to live in them must be detestable. Even at this early hour, all the *shops* are open, if by that name you may designate little holes in the sides of the streets, where the faithful squat in their slippers, and smoke, pray, and drink coffee all the day long, each with a sallow or black attendant, who plays shop-boy, cheat, and pipe-feeder to his dingy lord and master. Jackasses and turbanned Arabs throng the streets so densely that you are glad of your Dragoman, who precedes you with a short cane, in the use of which he is by no means scrupulous. But the great Dromedaries, though fewer in number, are far more troublesome than the people; they carry huge packages on their sides, stride along irrespective of man or beast, poking their heads out before them, like geese going under a barn door, grunting dissatisfaction at their load, yet bearing it very patiently all the while. The hoofs are the most curious part of these animals, being great orbicular elastic pads, which collapse, as it were, when the foot presses the ground, much as an accordion does, but without the music. However, I must hurry on to the bath, to reach which we wound through many nasty lanes and streets of shops, which are called bazaars, but which I should rather yclep "*Vennels*," if you remember the Glasgow holes of that name. After all, a Cairo bazaar is very like a Greenock street, without the windows.

Arrived at the bath, we were ushered into a marble-paved quadrangle (none of the cleanest), open above, with seats all round, upon which many of the faithful were distributed, in all stages of preparation. Though these are the best baths in Cairo, they seemed anything but select, either as to their attendants or cleanliness. To undress, we mounted a sort of stage, or dresser, covered with dirty sacking beds of questionable character. A man, or rather the spectre of a man, worn to skin and bone by the enervating influence of the bath, then took us, one by one, clothed in airy garments, and shod in sabots, through many dark passages to the bath-room, a dark, dirty, domed chamber, with a bath of muddy water at 94° in one corner, the stone-work of which abounded in cockroaches. In the middle was a stone fountain of hot water at 123°. All assembled, one by one, in the bath-room, and were unceremoniously popped in, four at once, and splashed, then taken out and flayed with small hair-brushes; anon scrubbed with black soap, some of which I have still in my eyes. After a sort of drying I thought all was concluded, when the spectre came up to me carrying a basin of scalding water, which he, without any notice, threw at the pit of my stomach, causing me to spring back, slip, and measure my length on the marble floor. When recovered, I was shaved, without soap or lather: "Crossing the Line" is nothing to it; for a razor is scraped along the face and pressed hard against it at right angles to your visage, as you scratch a written word out of a letter. When the barber came to my throat, I felt very uneasy, and but for shame would have run away. The shave, after all, was an exceedingly bad one, which I repeated at the inn an hour later in the day. After ducking, dry-rubbing, and polishing, we were dressed *à la Turc*, with turbans, and deposited in a tolerably clean bed, side by side, like herrings in a barrel, where pipes and coffee were brought to us. This we enjoyed till a Shampooer (or Lampooner, as our friend in Ireland has it) came and kneaded my limbs with his knuckles, cracking all the arm, finger, and toe-joints. He then put his knee in the small of my back, and screwed my body round, as you wring a fowl's neck, till I heard the gristle of my back-bone crack, and concluded by giving my head a wrench on my shoulders which left me a crick in the neck. After, and during dressing, we were stunned with repeated prayers for "Backsheesh" from all those officiating in the ceremonies, and with difficulty we got away minus 3*s*. a head, and plus a good many fleas, which we had not before.

Lord Dalhousie having asked me to call for him in the morning, I repaired on the back of a jackass to the Palace his Lordship occupied, about two miles from Cairo. The road led through an avenue of *Acacias*, but was otherwise dusty and disagreeable, till I reached the Palace gardens. These are very pretty but uniform, formed of hedges of clipped *Myrtle, Geranium, Hibiscus Rosa Sinensis*, and groves of *Orange, Lemon, Citron, Bananas*, and *Olive*. Occasionally, *Jessamines* were trained over head; and the effect of the evergreen foliage which predominated, was always agreeable and bright. At the door of the Palace I found Fane and Courtenay smoking long pipes, after the manner of the Faithful. Upstairs were Lord and Lady Dalhousie, and a party of official gentlemen, including the Honourable Capt. Murray, of Pembroke

Lodge, Richmond Park, (whose brother is Consul-General here,) who gave me a cordial welcome. His Lordship kindly invited me to accompany him to the citadel at 2 o'clock, to be introduced to Mehemet Ali, and to bring as many officers as were inclined to come. This over, I rode back to the inn, and took another donkey for the Rhoda gardens, belonging to Ibrahim Pacha, (now in Italy) which are superintended by a Scotch gentleman, Mr. Traill. But as I shall mention them in another letter, I here content myself by saying that Mr. Traill received me and the plants from Kew very kindly, and that he will in return transmit seeds of the celebrated *Doum Palm*,* to obtain which he will send to Upper Egypt, the only place where it grows.

I returned to the inn with barely time to dress for the Pacha's Palace, whither we repaired in a handsome carriage full of officers. The road was long, through narrow and very crowded streets. We were preceded by two running attendants with long whips, which they laid about them right and left, to clear the way, utterly regardless of man or beast, who scurry out of the way, or cower under their Bernouse cloaks to fend off the blows. I saw an unfortunate Egyptian, whose cart struck across the street, receive a terrible whipping, to which he offered not the least resistance. We were rather late, and arrived just after the Governor, and as the guns were pealing forth a royal salute. Passing under the gates through a magnificent new and half-finished alabaster mosque, (see the Panorama of Cairo,) we arrived at the quadrangle, where the Governor-General and his lady were alighting from a splendid six-horse coach, like the Lord Mayor's, with Egyptian Lancers as out-riders. The band played a sort of "God save the Queen" to their Excellencies, and I know not what to the second carriage, conveying Fane and Courtenay; but I was honoured with the Bohemian Polka for my share of the instrumental greeting. The gateway was crowded with tame-looking, fiercely-armed Egyptians, equipped with gorgeous sashes, diamond-hilted scymetars, and the like. Behind stood plainly-dressed attendants, on a dais, each wearing a gold badge on his breast,—the Crescent and Star of Egypt; they passed us on through gorgeously-furnished apartments, divaned all round, and covered with the richest Turkey carpets, to the private audience chamber. It was splendid, hung with looking-glass; the walls, above the mirrors, are covered with pale satin worked with crimson and gold flowers. The windows were fifteen feet high, having transparent blinds wrought with most exquisite groups of flowers, admirably imitated. All round were sofas and cushions of satin, embroidered with Carnations, Fuchsias, and Roses. Mehemet, an old, cunning-looking man, in a plain olive-green braided coat, sat on the right hand corner, near the window, but he received us standing. He conversed with Lord Dalhousie by means of a Dragoman interpreter, we being all arranged round, and forming a gorgeous *cortège*. Behind were several gentlemen, including the Pacha's son and son-in-law, and many plainly attired domestics. In a few minutes each of us, including Lady Dalhousie, was furnished with a pipe six feet long, its amber mouth-piece as thick as my wrist, and eight inches long, studded with brilliants. The bowl was placed in a silver dish on the ground, and we all whiffed away. The servants then brought coffee in little egg-cups, set in gold filagree holders, blazing with diamonds. The coffee is not made like ours, the beans being ground to paste, the liquid thus consisting of coffee grounds and all, for nothing is thrown away. In this form it is tolerable, but to an English palate not so good as our's, being turbid. The same attendants removed the pipes and coffee cups, and we retired much pleased with the novelty and magnificence of the scene.

---

* Mr. Traill has already performed his promise: seeds in beautiful condition have reached Kew. The *Doum Palm* is the *Cucifera Thebaica* of Delile, who was the first modern author to give a detailed account of this singular *dichotomous* Palm. Theophrastus described it under the name of *Cucifera*, which Gaertner changed to *Hyphæne*. It is known to the Arabs by the name of *Doum*. The wood is valuable; but no use is made of the fruit.—Ed.

* * * * * *

The city of Cairo is built at the fork of the Delta, on the advancing spur of the first range of hills we had seen on our passage up from Alexandria, and which reaches from the Eastern Desert to the left bank of the Nile, there sloping down rather abruptly and presenting a fine site for the citadel, with its beautiful mosque and palaces. All the little features of the banks of the stream, between Aftéh and Cairo, which are familiar to us by Scripture History, and here realized for the first time, are forgotten, when Cairo and the Pyramids open to the view; for these are the first grand objects which force themselves upon the notice of the most heedless traveller. To me, however, the banded cliffs of mud along the banks were very suggestive, for they indicate the successive deposits of fertile soil, and as many epochs of rejoicing throughout the narrow belt of habitable land in Egypt, from the earliest ages, and through every change, however violent, which this miserable country has undergone. At the time of our visit (beginning of December), the Nile had just resumed its proper channel; and the banks, on either side, were, in some places, alive with the poor Fellahs, hurrying the seed into the mud. At Cairo, the belt of productive soil (which is everywhere confined to the overflowed portion) does not exceed five miles broad on the right bank, and not one upon the Cairo side; but the best use is made of it. Considering the vast size and body of water in the Nile, and the prodigious length of that river, its effects are trifling, less, perhaps, than from any river of the same dimensions. This is owing to the nature of the Desert through which it flows, and to the immense distance from which every particle of the precious mud is transported:—also, to the fact, that it is only the lesser branch, the Blue Nile (that of Abyssinia, and explored by Bruce), which contributes *at all* to the fertility of Egypt. On the other hand, if we reflect upon what the country would be without the Nile, its importance and effects can hardly be sufficiently estimated; for indefatigable as the river has been, it has not deposited more than eight feet of soil, since the time of the Ptolomies.

The Pyramids are on the opposite side of the Nile from Cairo; and the distance being about twelve miles, by road, (further or nearer, according to the state of the inundated intervening country,) we made arrangements over-night for starting early the following morning. At six we took donkeys, provisions, and two Dragomen, and passed through the narrow alleys and under the latticed windows of Cairo, to a place opposite Ghizeh. On our route we observed many palaces, belonging to wealthy merchants and princes, gardens, groves, and plantations, near the river; the School of Languages, and the Sugar-mills belonging to the Pacha; Ibrahim's Palace, named Rhoda, and a half-finished (apparently never to be completed) aqueduct of five arches, destined to convey water from the Nile to the citadel.

The spot where we crossed the Nile is highly picturesque, opposite the upper end of a long island, where the famous Nilometer is placed. The banks on both sides were crowded with latteen-sailed boats, and green with *Date-Palms, Acacias, Sycamores,* and *Sugar-cane* plantations. The river was a magnificent stream, as broad as the Thames at London Bridge, or thereabouts, shining in the sun, and flowing with a current of between two and three miles an hour, studded with boats, and evidently rejoicing in its course. We beheld the Pyramids six miles off, in a straight line; they rose above the Palm-trees, and looked grand in the distance; altogether different from anything that can be seen elsewhere. But they are so infinitely more curious than handsome, that it is impossible to help feeling that in *many* other shapes these wondrous masses would have appeared bigger, and in *any* other, more attractive. In themselves, they do not invite, as most remarkable objects would do, a closer inspection; it is the force of association which compels you to approach, together with your previously acquired information respecting the *empty wonders* they enclose.

The island, on which the Nilometer is situated, is walled from the water far above the level of the soil; its houses and green trees, however, peep over the wall, the latter (the trees) *Dates, Oranges, Acacia,* and *Banana,* being of highly varied heights and hues, and giving the whole a very pleasing appearance. The upper extremity of the island is occupied by the building, in which the height of the Nile is registered: there is nothing to be seen in it, yet it is an interesting object, for, if I remember aright, the former, (and I dare say the present,) rulers of Egypt have a mode of regulating the corn-market, by suiting the official report of the state of the river to that of their granaries. Exaggerating the height of the waters is tantamount to promising an abundant harvest for three years, and thereby lowering the price of the corn already in hand.

We crossed the river in a boat, similar to what is figured in Bruce's Travels, and called a *Canjan.* We were in a small one, and the asses followed in another. During the passage, I had time to make two little sketches,—one of the opposite bank, Ghizeh and the Pyramids, from the east shore,—and the other of the Nilometer and Cairo, from the west,—in each instance, looking across the noble stream. Both banks were equally thronged with filthy Egyptians, of all mixtures of blood; pure and mingled Ethiopians, Nubians, Abyssinians, Turks, and a few Copts, whom I suppose to be the most peculiar race; at all events they appeared to have the long almond-shaped eye, so conspicuous in the sculptured figures of ancient Egypt, and quite different from the Turk or Arab eye. I was unfortunate in meeting with no person in Cairo who could give me information on this and many other points: all the individuals to whom I was recommended were away.

From Ghizeh, the village to which we crossed, and from which the Pyramids take their name, we struck inland, through cultivated fields and Date plantations for a little way, and then over a long flat, without house or tree, and all cut up by little canals and dykes, retaining the waters of the late inundation, and distributing them in every direction. The soil is a rich fat mud, through which the naked Arabs were wading, scattering seeds of Pulse, Tares, and such vegetables. We wound along the margins of the enclosures for many miles, by a course so devious that often our backs were turned to the Pyramids. The latter looked bigger and bigger as we approached, till we arrived within two miles of their bases. Our progress was arrested by broad beds of mud and clay, puddly canals, and chains of Lagoons, which, together, constitute the outer limit of the fertile soil on the west boundary of the inundation. In these pools a great body of water is retained, which gradually evaporates and leaves its bed dry, previous to the following year's rise of the Nile. Ere reaching them, we were met by parties of

Arabs, who scampered up to us and led us to the brink of the pools. There two of them lifted me off the donkey, and forthwith making a Queen's chair, transported me half across, landing me in some rich mud, covered with Maize stalks. Thus we were all conveyed, riding at times, then splashing through the wet, and again carried by two naked and evil-smelling Arabs, till we arrived at some hard soil, a mixture of mud and sand, on the edge of the Desert. An abrupt cliff of limestone and sand rises immediately above the half-inundated tract I have described, and upon it are placed the two grand and several lesser Pyramids, the Sphynx below them on the slope of the sand-hills, and the mouths of the Catacombs on the cliff: a strange assemblage of objects bearing no obvious relation to each other. From here, the Pyramids looked vast indeed; but, as we approached still nearer, owing to the fore-shortening of their sloping faces, they rapidly decreased to appearance, till when standing under their bases, it required both study and consideration to appreciate their gigantic dimensions. The perspective of each face is so rapid, that you would positively think a few strides are all that lie between the bottom and the top.

As to the Sphynx, it is truly stupendous, and looks larger and larger as you approach; no doubt, because it is an object directly comparable with that ever-present standard,—*one's self*. Of merit of execution it has none: grandeur, beauty, placidity, and dignity, are alike wanting; there is not a worse and more ineffective piece of workmanship in St. Paul's or Westminster Abbey. Like the Pyramids, it is wonderful and suggestive to an educated individual, but nothing more. The poor face is terribly knocked to pieces, and as it can never have had any loveliness to spare, you may guess how flat and unengaging an object it is, buried up to the throat in sand and rubbish, and looking as unable to help itself, as it really is. One likes to relieve a noble piece of art, but it is impossible to pity the Sphynx.

The bases of the Pyramids are covered deeply with rubbish; so that the rock on and with which they are built, and which forms a core, eight feet high, in the centre of the largest, is nowhere visible. I had only time to go over one properly, the Pyramid of Cheops, whose dimensions you doubtless know, 456 feet high, and each base 763 feet. The crowd of vociferous and importunate Arabs who surrounded us here, impeding our motions, and menacing us with a colony of vermin, was most disagreeable. They all belong to one tribe, and are under the Sheik of the district, who pays tribute to the Pacha, and demands money for permission to ascend, or enter the edifices. Two naked beings take you to the top, scrambling like cats, and dragging you from ledge to ledge. As the steps are much higher than they are broad, each measuring four feet and two-thirds of a foot high in the lower tiers, the ascent is fatiguing, though it may be accomplished in ten minutes. All parts, except some of the interior, are formed of shell-limestone, the same as the subjacent rock, of a pale yellow colour, and tolerably hard. The whole was once cased in a still harder rock, which, receiving a beautifully smooth surface, rendered the slope of each face as sheer as polished marble. But all this casing is gone from the Great Pyramid; a little only remains at the apex of the second, or Pyramid of Cephrenes, which is thus rendered all but inaccessible. The view from the summit is magnificent. Beneath, looking westward, lies the emerald plain, through which sweeps the mighty Nile, sparkling in the sun, as it winds through groves, gardens, and cultivated land. Beyond rises the city of Cairo, a dense mass of white houses, and minarets like spear-heads, crowned by the Citadel, with its monster castle, domes, and pinnacles, and backed by the white cliffs of the Mohattem Hills. Looking up the Nile, the ribband of verdure appears to dwindle to nothing, as the river retreats into the desert, its course *buoyed* out, so to speak, where it traverses the sandy plain, by two other groups of Pyramids on its banks; beyond which the eye perceives no outline, or horizon, to the sand hills. Due S. E., in a line with the diagonal of the great Pyramid whereon I stood, the second Pyramid rose, about 300 yards distant, of nearly equal height, capped with the relics of its casing, and terminating in all but a sharp point. At its foot were little Pyramids, awkwardly placed, without reference to the parent one, and much dilapidated. All to the west was bathed in the yellow haze which overhangs the sand-hills of the vast Lybian Desert.

I took a few sketches of these scenes, the grandest, perhaps, but certainly the least attractive I had ever viewed; and after collecting all the Lichens I could find on the stones near the summit (where alone they grow), I descended, and made arrangements for visiting the interior. There I was highly interested. Though hurried by two Arabs along the slippery inclined passage, choking with heat and dust and crouching on hands and knees, I perfectly remembered every passage and chamber, every ascent and descent. The intense interest, with which I had read, when a boy, the history of the entrance and exploration of this Pyramid, was vividly recalled to my mind; and I astonished my companion by telling him when we were approaching a well, a chamber, the ascent or descent, &c. The incomprehensible form of the avenue which leads to the upper or King's Chamber, which is many times higher than broad, and its sides, above, terraced outwards, as it were, with slabs of polished granite; the polished canal, along which the Sarcophagus was dragged; and the Sarcophagus itself,—all were familiar to my mind; even to the polished granite stones of the chamber, and their dimensions, each seventeen feet long by three and three-quarters wide. The inside of the Pyramid was to me incomparably more striking than the exterior; perhaps only because it had afforded to my memory a most happy occasion of rejoicing in its exercise, and because our earliest reading is retained the best.

There is one grievous disappointment in the Pyramids, and it is increased by visiting them;—I mean their utter futility. It is now, I believe, proved that they are simply the mausolea of individuals. When I was a child, I was used to regard them as having been constructed for a triple object (any one of which were better than the commemoration of a mere mortal), namely, as astronomical buildings, as places of worship, and as edifices dedicated to the Genius of the Nile, whose waters brought fertility to their bases. If any of these ideas had been correct, the Pyramids might, when more understood, have thrown some light on the science of the Egyptians, and though mixed up with astrology and mythology, they would have given evidence that their constructors possessed a faint insight into truths, which, till lately, were hidden from ourselves. The Egyptian priest, who told Pliny (I believe) that the Atlantic Ocean contained islands, bigger than Europe and Africa put together, might have left in the Pyramids some further proof of his conviction that there is a Western World, if Science had, either wholly or in part, suggested the foundation of these structures. Our early prejudices are thus liable to be continually outraged. Yet I hardly see why we should be sorry to find out, that our predecessors were less wise than we had supposed them.

* * * * * *

Cairo I found a most interesting place, for everything but botany. The city, as perhaps I have already mentioned, is situated on the slope, or spur of a long range of hills, which there dips down to the Nile. To the south there is little space for cultivation, the desert coming close up to the river, leaving but a narrow strip, of which every advantage is taken: on the opposite side, however, the belt is broader, some miles across, extending from the Nile to the desert, and kept fertile by canals, cut between the river and a long line of puddles, which run parallel to the Nile, but close to the desert. There are no trees, except upon the banks on either side, and these almost exclusively Date-Palms, in clumps and groves, *Acacia Lebekh* in long avenues, and scattered Sycamore figs. All the Date-trees are spoiled, as to appearance, from the dead, or dying, leaves being invariably cut away, when the Palm shoots up a long naked rough-looking and hungry stem, forty to sixty feet, crowned with a formal tuft of fronds; at this season the fruits are all gathered, and of these there are eight or ten varieties, large and small, yellow, red, purple, and almost black. A little grass grows under their shade, or sometimes wheat is planted. The fields are all laid out in squares of various sizes, carefully irrigated from the Nile, the water when required being raised by wheels, whose tires are covered with large pots, and the whole moved by a bullock. There are but few hedges and they are chiefly of Prickly-Pear or *Parkinsonia aculeata*, the latter very beautiful, from its bright green and feathery foliage. Close to the river the crops appeared to consist of Sugar-cane, Hemp, Tobacco, Sesamum, Cotton, Coffee, Rice, and Indigo, with scattered Oranges, Lemons, Bananas, Mulberries, *Ceratonia Siliqua,* and a few other trees, but the fruits are chiefly confined to the walled gardens of the richer Egyptians. The Sugar-cane appeared a very small kind, much smaller than the commonly cultivated one, which is the Bourbon, I believe, such as you have at Kew. Further from the town and river, the great alluvial deposit, which alone is fertile of all Egypt (except the Oases), is rudely cultivated with various *Leguminosæ,* just sprouting. *Holcus Sorghum,* Lettuce, Flax, Poppy, Cumin, and Coriander produce at this season a rich carpet of the liveliest green.

Cairo stands half on the Desert, and half on the alluvial deposit, so that you may enter it amongst gardens, avenues, and richly-cultivated fields, and step from the gates on the other side into utter sterility. On the east portion you see no one but a solitary Arab on his Dromedary, or occasionally a long caravan of laden camels, breaking the horizon of rock and sand; whilst the river-ward suburbs are crowded with laden asses, camels, men, women, and children, all busy carrying or planting and sowing, ploughing or irrigating, so densely packed, dirty, and disorderly, that it is impossible to conceive by what governing power they can be made profitable servants and subjects.

The Rhoda Gardens are situated on a long island which divides the Nile at Cairo, and upon the end of which the celebrated Nilometer is placed. The first thing which strikes you on entering them is the want of Exotics. All Eastern gardens are, you know, mere collections of the common and more ornamental *native* plants, arranged in straight lines to suit an Eastern taste, and crowded together to produce shade and masses of green to rest the eye upon; hence the Rhoda Gardens are disappointing at first sight, for they present neither the extreme variety of our English botanic or pleasure gardens, nor the perfectly artificial and formal luxuriance of Shoobra. Rhoda is, however, really and truly the *Dropmore* of Egypt, and it is quite marvellous what has been done in the way of introducing exotic trees, under difficulties such as no other Botanic garden ever had to surmount. St. Petersburg may shut out her frosts, and Calcutta moderate her heats; but no human ingenuity can counteract the inundation of the Nile at one season, or fend off the hot blast from the desert at the succeeding one. Even the cold at Cairo is sometimes very trying to vegetation, especially at nights, so that the plants have to contend with every disadvantage.

I had but a very few minutes to spent at Rhoda, during which Mr. Traill kindly took me round part of the gardens, and pointed out what was of most interest. With the box of cuttings from Kew he was much pleased; all appeared in excellent condition, though, alas, few of them have even a chance of succeeding. I did not perceive any definite plan or arrangement in the gardens: the first object here, as everywhere in the East, is shade, and it is afforded by a profusion of the trees common about Cairo, and mentioned above. The walks were generally bordered by hedges of *Lawsonia* or *Parkinsonia*, and sometimes Myrtles, whilst Rosemary takes the place of Box. Sixty acres are laid out in walks, thus bordered by hedges or trees, inclosing square or variously-formed areæ, among which many interesting trees of all countries have been planted, with various success. The Passion-flower trailed luxuriantly and flowers abundantly. A fine little Banyan tree also thrives, at the expense of much labour and ingenuity on Mr. Traill's part, who brings pots of water to the branches, so arranged that the roots dipped into them. All the genus *Ficus* do well, as do Mahogany, Logwood, *Casuarina*, *Sapindus Saponaria*, many *Acaciæ*, *Pittospora*, *Eugenia*, and other *Myrtaceæ*. Of shrubby things which throve, I observed *Turnera*, *Oleanders*, *Guilandina Bonduccella*, *Tamarix*, *Hibiscus*, *Gleditsia*, various *Dalbergiæ*, one, the *Sissoo*, attaining the size of a tree, and yielding excellent timber in Egypt. Of the English, European, or N. American timber-trees, few prosper: *Araucaria imbricata* exists, and that is all; the *Oak* looks poorly; *Taxodium distichum* is yellow as a guinea, *Platanus orientalis* far from umbrageous. Cypresses are killed by the inundations of the Nile. The Asiatic

Teak even will not grow, owing to the wet at this period. The Palms are very capricious: some have succeeded admirably, as *Oreodoxa regia*, sent by Loddiges, *Latania Borbonica*, and some *Caryotas*; these, however, are individuals, forming no great features in a garden of sixty acres, though very handsome in themselves. Upon the whole the Rhoda Gardens are a noble project, more interesting to a botanist than ornamental, according to European taste. Everywhere you turn you are greeted by some English or well-known exotic, struggling to accommodate itself to Egyptian bondage, or rebelliously resenting all poor Mr. Traill's kind attentions, and doing the worst a slave can do—dying on the spot, and breaking his master's heart.

Some accounts of the Rhoda Gardens are published in the Gardeners' Chronicle by Mr. Traill himself, which I should have liked to have perused previous to my visit, but had no opportunity: they are, however, worth your referring to.

(*To be continued.*)

MUSA TEXTILIS.

We are sure the following account, by Thomas Mc. Micking, Esq., lately of Manila, of the manufacture of a fibre called *Manila Hemp*,* afforded by a species of Plantain *(Musa textilis)*, and which is now imported into this country in large quantities, will be read with interest. It is extracted from a paper read before the Philosophical Society of Glasgow, February 1848, and kindly communicated to us by W. Gourlie, Esq.

"At first sight the Plantain tree from which the Manila Hemp is made, appears not to differ from other *Musæ*. The fruit is eaten, but is small, hardly exceeding two inches in length, when the seeds arrive at complete ripeness. The uses of this variety of Plantain are great: from it are manufactured ropes, cable, and woven cloth of extreme fineness. For these purposes they fell the tree by the root, or close to the ground, and cut off the upper extremity or head at the time when it is about to produce fruit, removing also the leaves.

---

* A very beautiful shawl made of this article, and abundance of the fibre in different states, are deposited in the Museum of the Royal Gardens of Kew.

The layers of the tree or plant are torn off one by one; and the fine skin from their inner surface is removed with a knife, which every Manila man carries in a sheath in the waist-string of his trowsers, like many of our sailors. The layer or roll, when stripped of its skin on the inner surface, is torn into strips of about two finger's breadth. One of these strips is placed on a plank or rude table, the inner skinless surface next the table, on which it is pressed by the sharp edge of a knife; of course the knife may be held by the hand; but an easier way is to fasten it to the table with a string, where the blade joins the handle, and the end of the handle being pressed up by a piece of bent bamboo, performing the office of a spring, the sharp edge presses against the outer or skinned surface of the strip on the table, with sufficient force to cut through the soft fleshy substance, though not so strongly as to wound or sever the stringy fibre. The layer or strip of the plant being held down to the table by the sharp knife-edge, the workman grasps the end next him and pulls it towards him: I can best explain the degree of force necessary, by saying, that when I tried it I had to exert my strength, an *easy* pull did not suffice. The pulpy substance remains on the side of the knife away from the workman, who draws the clean fibre towards him. When entirely pulled through, he changes it, end for end, grasping the cleaned fibre and drawing towards him underneath the knife the portion first held in his hand, which in like manner on being pulled towards him becomes cleaned fibre. If not sufficiently cleared, the process is repeated a second time, which however is unusual. The specimen of hemp now produced is long, and well cleaned, consequently of good quality. It was made in my presence and partly with my own hands on the occasion described. The hemp of commerce is often shorter, from the convenience (for carriage &c.) of cutting the stem of the *Musa* plant into two or more lengths; rather than keeping it so long as felled.

The hemp is also often matted, from portions of the pulp substance or skin remaining with the fibre, by the carelessness or unskilfulness of the workman. The portions when cleaned are hung for an hour or two to dry; if in the open air on any branch of a tree, within reach of the operator's hands; if in a house, on a peg in the wall: no further preparation is necessary for the ordinary Manila hemp of commerce. The production of a day's work of three persons, probably not working hard, is ordinarily about 14lbs.

Of the fibres thus prepared some are fine and fit for being woven: these the women select, separate, and roll up tightly into a ball as big as a child's head, which is placed in the wooden mortar, of which there is one in every house for husking rice, and is pounded for some time with the wooden pestle. This operation renders the hemp-thread flexible and less liable to break; after which the ends are knotted together by women and girls, to form a continuous thread. The weaving process is the same as for Cotton fabrics. In weaving *fine* hemp cloth, the wind is apt to break the threads, if not under shelter. The cloth when woven is placed for a day and night in water, with a little lime made from the sea-shells, and afterwards washed and stretched out. The price paid to the actual producers of the hemp must be very low; because it has to be collected in small quantities from house to house, and transported, chiefly on horseback, through a country whose roads are few and bad. Its selling price is commonly about 11*s*. or 12*s*. per cwt. at the outports, whence it is conveyed by coasting craft to Manila. At Manila the hemp is screwed into well-shaped bales, measuring about ten cubic feet, and weighing 280 lbs. each, which is the form in which it appears as merchandise. The screw is a worm, worked like the capstan of a ship, which in descending forces the hemp into a strong wooden box, the upper portions of which are taken to pieces as the hemp is forced down.

The price at Manila, in bales ready for shipment, is usually about 18*s*. or 20*s*. per cwt. The quantity exported annually is about 5,000 tons weight; of which about two-thirds or three-fourths go to the United States, and the remainder chiefly to this country, where its consumption appears to be increasing.

North-American Botany.

The distinguished and veteran botanist and traveller, Nuttall, has recently returned from another visit to America, where he has again happily been engaged in furthering the cause of Botany in the New World. While at Philadelphia, he inspected a collection of plants recently made by Mr. Gambel, during some extensive travels between the Rocky Mountains and the Pacific. Unfortunately that portion gathered between the Missouri and Santa Fé was wholly lost; or, at any rate, was committed to the charge of a person who never delivered it at its place of destination. The existing collection consists of about three hundred and fifty species, and was made on the route from Santa Fé to California. Among them are plants of considerable interest, especially some obtained on the island of Catalina, off the coast of San Pedro: and in particular a shrubby *Scrophularinea*, with rather large, tubular, bright scarlet flowers (*Gambelia*, Nutt.), somewhat allied to *Galvesia*, Ruiz and Pav., and another shrubby plant, of dubious affinity, 4–5 feet high, with cuneate, small, entire, alternate leaves, and white flowers, not very unlike those of Pœony, as large as apple-blossoms; but its striking character consists in the presence of an arillus, forming a cup around the seeds, torn into so copious a fringe, that, on first opening the capsule, the seeds seem almost to be wrapped in tow. Of this collection Mr. Nuttall has described more than one hundred of the new or hitherto unrecorded species, which we believe will appear in the Transactions of the Academy of Natural Science of Philadelphia. Mr. Nuttall brings word that the North American Flora of Messrs. Torrey and Gray is about to be continued immediately, and this is welcome intelligence to every botanist.

NOTICES OF BOOKS.

Opuscula Omnia Botanica THOMÆ JOHNSONI, *Pharmaceuticæ Societatis Londinensis Socii*:—*nuperrime edita a* J. S. RALPH. *Londini; sumptibus Guliel. Pamplin*, 1847.

This is an accurate reprint of the tracts of Dr. Thomas Johnson, of whom but little is now known save from his writings, and as the editor of the second edition of Gerard's Herbal in 1633. He was killed, says Sir James E. Smith, on the authority of Wood, while fighting in the Royal cause in 1644. The name is commemorated by Mr. Brown, in the beautiful and graceful *Johnsonia* (*J. lupulina*) of New Holland.

Mr. Ralph has rendered service to botanists in putting a reprint of these *Opuscula* within their reach; though we think the usefulness of the work would have been increased if the modern names of the plants had been given in the catalogue of species. The first pamphlet is entitled "Iter Plantarum Investigationis ergo susceptum a decem Sociis, in Agrum Cantianum. Anno Dom. 1629. Julii 13. Ericetum Hamstedianium, sive Plantarum ibi crescentium observatio," &c. The second describes similar excursions and in the same localities, in 1632. The third is entitled "Mercurius Botanicus, sive Plantarum gratia suscepti itineris, Anno 1634, Descriptio. Cum earum nominibus Latinis et Anglicis," &c. This catalogue is alphabetically arranged and seems to relate to plants in the south and west of England;—and is followed, fourthly, by the "Thermæ Bathonicæ," or an account of the properties, use, &c., of the Bath-waters, accompanied by a diagram of the city, and of the Baths as they existed in 1634: and, lastly, we have "Mercurii Botanici Pars altera," &c. or an account of a botanical journey into Wales. These *Opuscula* are the result of perhaps the earliest botanical excursions on record, (undertaken about 200 years ago).

MOSSES *collected by* T. ANDERSON, ESQ. *Surgeon of H.M.S. Plover, on the Coast, from Chusan to Hong-Kong*; *Dec.* 1845, *to March*, 1846. By W. WILSON, ESQ.

(*with a Plate.* TAB. X.)

1. *Phascum crispum.* On earth-banks, Sam-Sa Bay.
2. *Physcomitrium acuminatum,* Br. and Schimp., Bryol. Europ. Moist shady bank opposite Hong-Kong, Sam-Sa Bay, Chusan.
3. *Hedwigia ciliata,* Br. and Schimp. (Anictangium, Hook. and Tayl.) On rocks at Pih-quan.
4. The same. Rocks in the mountains, Chusan.
5. *Tortula muralis.*
6. *Tortula unguiculata,* var.
7. *Weissia controversa,* var.
8. *Trichostomum inflexum,* Br. and Schimp. (?) Specimens unripe. On banks, Chusan.
9. *Fissidens,* not *bryoides,* leaves not margined. Specimen imperfect, and unfit for examination.
10. *F. adiantoides.*
11. *F. nobilis,* Griffith, Musci Assam. Moist hedge-bank, opposite Hong-Kong; near Buffalo Bay.
12. *Dicranum glaucum.*
13. *Thysanomitrium Richardi,* Schwaegr. (?) No fruit. Rocks among the mountains, Chusan.
14. *Didymodon proscriptus,* Hornsch. (?) var. seta duplo vel triplo longiore.—In habit this Moss is a *Trichostomum,* but the peristome is that of *Dicranum.* It is closely allied to *D. longirostris.* Moist shady banks opposite Hong-Kong.
15. The same. On the ground on a mountain top, Tung-zan.
16. *Trematodon longicollis.* On a granite rock near the Canton Bazaar, Hong-Kong.
17. *Macromitrium fuscescens,* Schwaegr. Suppl. t. 190. On rocks along the coast.
18. *M. Moorcroftii,* var. capsulæ ore non plicato.—On rocks in a tea plantation, Tung-zan.

19. *M. involutifolium,* var. capsula breviore, siccitate lævi.—On rocks and on trunks of trees, &c., Chusan.

20. *Ptychomitrium,* Br. and Schimp. (?) (vel *Notarisia*?) allied to *Pt. polyphyllum,* but the setæ and the leaves are considerably shorter. Capsule ovate, erect. Peristome composed of sixteen broad cribrose teeth, scarcely cloven. Calyptra absent, but said to be dimidiate and hirsute. On wet stones in a glen, Sam-Sa Bay.

21. *Bryum argenteum.*

22. *B. capillare,* var. (?) Specimen imperfect. Leaves less twisted when dry than is proper to this species. Moist rocks in the mountains, Pih-quan.

23. *B. truncorum,* Bridel. B. Auberti, *Montagne,* in "Musci Nilgherienses." Moist places in the mountains, Chusan. Of this Moss there is no published figure, and *Bryum Auberti* of Schwaegrichen has, by himself, and by Hornsch. in Fl. Brasiliensis, been confounded with a Brasilian Moss more nearly allied to *B. erythrocaulon,* Schwaegr. but distinct from it in the spinoso-serrate leaves. The true *B. Auberti* has the stem densely covered with radicles, and the leaves when dry are widely-spreading, opaque and coriaceous.

24. *Mnium affine,* var. γ. *rugicum,* Br. and Schimp. (?) foliis siccitate vix crispatis perichætialibus longioribus angustis.—This is not much unlike *M. cuspidatum,* but the inflorescence is dioicous. Moist shaded bank in a glen, Pih-quan Island.

25. *Mnium radiatum,* (n. sp.) Dioicum: caule gracili apice ramoso, ramis verticillatis patentibus, foliis lanceolatis denticulatis, margine recurvis submarginatis solidinerviis (dorso spinulosis) patulo-incurvis siccitate intortis, perichætialibus conformibus, capsula pendula, operculo hemisphærico-conico. (Tab. X. A.)

Hab. Moist shaded bank in a glen, Pih-quan Island.

Stems an inch and more in height, slender, with a single whorl of slender, spreading branches just below the flowering apex, as in the Bridelian genus *Philonotis.* Leaves narrow, dark green, scattered, incurved, especially when dry, in which state the Moss has a peculiar aspect. Male flower stellate, the perigonial leaves wider and larger than the rest, widely spreading. It is intermediate between *M. stellare* and *M. orthorhynchum,* most allied to the former, and in its ramification approaches to *BryumMenziesii,* Hooker, which is also a *Mnium.*

TAB. X. A. Fig. 1, 2, Plants; *nat. size*; f. 3, 4, leaves; f. 5, transverse section of a leaf; f. 6, apex of a leaf; f. 7, perigonial leaf:—*magnified.*

26. *Bartramia rigida,* Br. and Schimp. var. gracilis. In a marsh on the hills, Pih-quan Island.

27. *Polytrichum angustatum,* var. Wall tops and dry banks, Chusan.

28. *Polytrichum tortile,* var. foliis angustioribus. "P. contortum, Menz." Harvey, in "Musci Indici," not Schwaegr. Foliage, when dry, reddish-brown. Perhaps a distinct species.—On the ground, in a copse-wood at Chusan.

29. *Leskea fragilis,* Hook. and Wils. in Drummond, Musc. Americ. No. 101. Same as the next of that work (n. 102.), of which it is the barren state, and hitherto known only without fruit. On dry banks, Chusan.

30. *Anomodon fragilis,* (n. sp.) Caule repente, ramis suberectis incurvis brevibus gracillimis parce ramulosis, foliis ovato-acuminatis subinde ovato-lingulatis obtusis squarrosis fragilibus siccitate appressis evanidinerviis perichætialibus longioribus ovato-lingulatis, seta perbrevi, capsula suberecta, operculo brevirostre, calyptra pilosa. (Tab. X. B.)

HAB. On the trunk of an old tree, Chusan.

Fertile plant much more dwarfish than the supposed barren state (No. 29), not more than half an inch long; the leaves also, except a few at the extremity of the branches, are scarcely ligulate; they agree, however, in the dull glaucous hue, granular texture, and being appressed when dry, the branches become very slender. Seta two lines long, smooth. Vaginula hairy. Perichætial leaves erect. Peristome (scarcely intelligible in our unripe specimen) with sixteen outer teeth, sometimes bifid and traces of internal cilia of the same length. Annulus simple.

Spores small. Operculum shorter than the capsule, conico-rostellate. Calyptra reddish-brown, hairy, very small.—Dioicous?

It has some affinity with *A. viticulosus,* and its allies. The calyptra connects it with *Lasia* of Bridel. It is smaller than *L. subcapillata,* and is not easily to be confounded with any described species.

Tab. X. B. Fig. 1, Plants, *nat. size*; f. 2, 3, portions of a plant; the latter with capsules, accompanied by operculum and calyptra; f. 4–9, leaves; f. 10, perichætium; f. 11, portions of peristome:—all more or less *magnified.*

30. *Pterogonium laxum,* (n. sp.) Caule repente parce ramoso, ramis brevibus vagis, foliis laxis subdistichis subsecundis elliptico-lanceolatis seminerviis, perichætialibus minoribus erectis acuminatis, seta brevissima lævi, capsula ovata suberecta, operculo brevirostro, calyptra pilosiuscula. (Tab. X. E.)

Hab. With the last, on old trees, Chusan.

In size and appearance very similar to the figure of *Anomodon Grateloupii,* Montagne (Ann. Sc. Nat. Aug. 1845, p. 100.), but different as to the peristome and calyptra, and the leaves not acuminated. It belongs to *Lasia* of Bridel. A very minute species. Stems an inch long, creeping, leafy. Leaves not crowded, concave, minutely serrulate, perichætial leaves nerved half-way. Seta not two lines in length, flexuose. Vaginula slightly hairy. Operculum shorter than the ovate capsule, conico-rostellate, as in *Anomodon Grateloupii.* Annulus obscure. A rudimentary inner peristome is present. Spores rather large, greenish. Inflorescence monoicous.

Tab. X. E. Fig. 1, Plant; *nat. size*; f. 2, portion of ditto and calyptra; f. 3, leaf; f. 4, perichætium and leaf; f. 5, peristome:—*magnified.*

31. *Neckera dendroides.* Without fruit. Shaded bank on Cow-Loon side, Hong-Kong, Sam-Sa Bay. Appears to have grown on a tree.

32. *Neckera Beyrichii,* Schwaegr. (?) var. foliis acuminatis. Possibly a different species, but the characters very obscure. On a dry shaded rock, Pih-quan Island.

33 and 34. The same. On old walls and trees, Chusan.

35. *Neckera macropoda,* Hedw. Without fruit. Trunk of a tree, Sam-Sa Bay.

36. *Hypnum microcarpum,* Hook. var. Caule longiore, ramosiore, capsula elliptica pendula. Moist upland ground, Hong-Kong.

37. *H. microphyllum,* Swartz. var. capsula minore, brevi. On stones among trees, opposite Hong-Kong.

38. The same. Dry shaded places among stones, Chusan.

39. The same. On stones in the Old Fort, Tung-zan.

40. *H. populeum,* Tung-zan Inlet.

41. *H. prælongum,* var. Near Buffalo Bay.

42. *H. concinnum,* (n. sp.) Caule repente, ramis erectis subincurvis simplicibus, foliis imbricatis rotundis concavis subapiculatis basi margine reflexis decurrentibus seminerviis crenulatis perichætialibus lanceolato-acuminatis. (Tab. X. C.)

Tab. X. C. Fig. 1, Sterile plant, *nat. size*; f. 2, perichætium; f. 3, 4, leaves :—*magnified.*

Hab. On an old wall, Chusan.

Closely allied to H. *obtusifolium,* Hook. (in Drummond Musc. Americ. No. 193.), but in that species the leaves are wider at the base, obtuse, entire, not decurrent nor reflexed in the margin, the nerve longer and stronger, and the areolæ narrower. *H. concinnum* has the branches about an inch long, growing in the manner of *Leucodon sciuroides,* fertile ones thickened upwards, the rest attenuated. Colour of the foliage pale green and rather glossy.—Dioicous. (?)

43. *Hypnum neckeroides,* var. Neckera subserrata, *Harvey* in "Musci Indici," without fruit. Moist places among rocks, near Buffalo Bay.

44. A smaller state of the next. Moist banks in the mountains along the coast.

45. *Hypnum plumæforme,* (n. sp.) Caule elongato erecto pinnatim ramoso, ramis brevibus patentibus, foliis falcato-secundis plus minus patentibus ovato-lanceolatis acuminatis serrulatis subenerviis, perichætialibus longioribus erectis attenuatis, seta longissima, capsula cernua arcuata cylindrica, operculo conico-apiculato. (Tab. X. D.)

Hab. In a marsh at Tung-zan, on the borders of a Paddy-field.

Stem six inches long, resembling that of *H. Crista-Castrensis,* but the branches are less numerous, and the leaves not striate. It is intermediate between that species and *H. pratense,* Koch. Seta three inches long. Calyptra reddish in this specimen, but whitish in No. 44, which is a smaller state of the species. It differs from *H. cupressiforme,* in the decidedly serrulate leaves and much curved capsule.—Dioicous. (?)

Tab. X. D. Fig. 1, Plant; *nat. size*; f. 2, 3, 4, leaves; f. 5, perichætium; f. 6, capsula:—*magnified.*

46. *Hypnum scaturigenum,* Schwaegr. Suppl. I. vol. ii. p. 197. (?) A very large aquatic state, without fruit. Stems four inches long and much branched. This Moss may be the same species as *Hookeria prælonga,* Arnott, (Diss. Meth.), and possibly, also, *Hypnum vesiculare,* Schwaegr. The leaves are ovate, obliquely acuminate, entire (not serrulate and acuminato-piliform, as Bridel describes them), and the areolæ large and rhomboid. In a pond at Chusan.

[The paragraph beginning with "This very curious moss," and the references given at the bottom of p. 91 (of this volume), belong to Tab. I. B., as given at p. 27, and not to Tab. IV. A., which should read thus:—

Tab. IV. A. Fig. 1, Plant; *nat. size*; f. 2, portion of a fertile plant; f. 3, 11, perichætia with capsule with calyptra; f. 4, portion of a plant with mature capsule; f. 5, perichætium and mature capsule; f. 6, portion of a male plant; f. 7, 8, cauline leaves; f. 9, single leaf; f. 10, apex of ditto; f. 12.:—all more or less *magnified.*]—Ed.

On the Specific Characters of certain new Cryptogamic Plants, *lately received from, and collected by,* Professor William Jameson, *on Pichincha, near Quito. By the late* Thomas Taylor, M.D.

The following species equal in interest and curiosity any of the preceding sent by the indefatigable and acute Professor of Quito. They who consider attention paid to such minute objects a trifling with time, should recollect, that a moss is as much a species as a man, and the work of the same divine Creator; also, that the attentive study of the little leads to the discovery of general laws applicable to the great; and that the knowledge of such laws arms the mind and the hand with power convertible to the highest purposes of life.

GYMNOSTOMUM, *Hedw.*

1. G. *Jamesoni*, Tayl. Monoicum. Caule cæspitoso, erecto, subsimplici; foliis arcte imbricatis, concavis, erectis, ovato-lanceolatis, marginatis, subdenticulatis, nervo excurrente; seta surculis duplo longiori; capsula erecta, ex strumosa angusta basi cylindrica, lævi; operculo longius tenuirostro; calyptra apice opaca coriacea, basi pellucida.

On Pichincha; near the limits of perpetual snow. 5th July, 1847. *Prof. W. Jameson.*

Tufts yellowish-green, scarcely half an inch high. Margins of the leaves incurved. True *annulus* or peristome none; but an annular, jagged, pale membrane may be observed within the mouth of the capsule. Lid with a slender beak. Calyptra in opacity and dark brown colour resembles that of some of the *Polytricha.* Perichætial leaves like the cauline. Below the base of the *perichætium*, in a cavity indented in the stem, are seen numerous linear anthers on slender bases and with wider tops, sometimes consisting of two series of cells. No *paraphyses* occur either with the anthers or the *pistilla*. We know of no *Gymnostomum* to which we may compare the present. It has neither the calyptra of a *Physcomitrion*, nor the persistent operculum of a *Voitia*, to which last, however, it approaches in habit.

2. G. *acidotum*, Tayl. Monoicum. Caule cæspitoso, surculis erectis, subsimplicibus, basi nudis, apice complanatis; foliis arcte imbricatis, erectiusculis, lanceolatis, longius acuminatis, subintegerrimis, grosse cellulosis, marginibus ad apices incurvis; seta apice subincurva, scabriuscula; capsula obovata, operculo planiusculo.

On Pichincha; near the limits of perpetual snow. *Prof. W. Jameson.* 5th July, 1847.

Stems scarcely a quarter of an inch high. Shoots brownish-red below, pale green above, from a narrow naked base enlarging into a broad flattish top closely set with leaves. Male flowers on the summits of short branches on the same shoot as the female. Anthers jointed. No *paraphyses* observed. Calyptra dimidiate, not swelled at the base as in *Physcomitrion*. *Gymnostomum Bonplandii,* Hook., found on the tops of the same Andes, differs by the smaller size, wider leaves, straighter and shorter *setæ,* and by its more distinctly apophysate capsules.

DIDYMODON, *Hedw.*

1. D. *crinàlis,* Tayl. Caule elongato, flexuoso, laxe cæspitoso; ramis erectis; foliis laxe imbricatis, erecto-patentibus, ex oblonga vaginante basi elongate setaceis, summo apice dentatis, nervo percurrente; capsula parum inclinata, subæquali, cylindraceo-ovata; operculo elongate conico.

On Pichincha. *Prof. W. Jameson.* 8th Aug., 1847.

Tufts three inches high, pale green. Leaves slightly secund. An *annulus* is present. Peristome of sixteen filiform teeth united in pairs at their bases. Closely allied to *Cynontodium flexicaule,* Schwaeg., differing by the elongated and oblong sheathing bases of the leaves, by their longer setaceous summits being distinctly dentate, by the more bushy tops of the shoots, and by the sheathing part of the perichætial leaves being oblong and angulate at the top.

2. Didymodon (?) *Pichinchensis,* Tayl. Caule laxe cæspitoso, erecto, apice prolifero; surculis simplicibus apice incrassatis; foliis arcte imbricatis, squarroso-recurvis, ovatis, acutis, flexuosis, margine tumenti-recurvis nervoque pellucido excurrente serrulatis, immarginatis; perichætiis minoribus; capsula erecta, inæquali, operculo tenuiter longirostro.

On Pichincha; near the limits of perpetual snow. *Prof. W. Jameson.* 5th July, 1847.

Tufts about an inch and a half high, rusty brown beneath, pale green above. Perichætium terminal; from its base usually one, sometimes two, simple annual shoots arise. Leaves with minute, may be here observed that Bridel erroneously refers Didymodon *squarrosus,* Hook., to his own Trichostomum *squarrosum.*

DICRANUM, *Hedw.*

1. D. *planinervium,* Tayl. Caule cæspitoso, subsimplici; foliis imbricatis secundis apice falcatis, ex lata triangulari basi lineari-subulatis, integerrimis, nervo latissimo percursis; capsula inclinata, inæquali, ovata; operculo brevirostro.

On Pichincha. *Prof. W. Jameson.* 8th Aug., 1847.

Tufts about one inch high, light green above, brownish beneath. Leaves scarcely amplexicaul, their nerve often indistinct, always filling up the acuminated parts. Peristome of sixteen bifid, barred teeth, whose segments are alternately unequal. In Dicranum *subulatum,* Hedw., the tufts are of a yellow colour and much shorter, the nerves of the leaves are distinctly defined and their tops are more setaceous, while the lid has a longer beak, and the capsule is shorter and wider.

2. D. *campylophyllum,* Tayl. Caule cæspitoso; surculis subsimplicibus, erectis; foliis subdistantibus, ex oblonga arcte vaginante basi elongate subulatis, integerrimis, nervo tenui percursis, apice flexuoso incurvis; capsula ovata, erecta, subæquali; operculo rostrato.

On Pichincha. *Prof. W. Jameson.* 8th Aug., 1847.

Tufts nearly two inches high, pale green above. The sheath of the leaves has its margin at the top slightly reflexed; the subulate portion departs at a considerable angle from the stem, and is three times as long as the sheath; it is most minutely crenulate at the point from the projection of its cells. Capsule without any apophysis: teeth of the peristome sixteen, dark red, barred, divided half-way down into unequal *laciniæ.* Lid scarcely as long as the capsule. From Dicranum *vaginatum,* Hook., which has likewise been collected by Professor Jameson on Pichincha, the present differs by the teeth of the peristome being far less deeply divided, by the more elongated points of the leaves, and by the shorter and more equal capsules. Dicranum *Jamesoni,* Tayl., is distinguished by the *struma* at the base of the more curved capsules and by the serrulate summits of the leaves.

LEUCODON, *Schwaeg.*

1. L. *scabrisetus*, Tayl. Caule procumbente, subpinnatim ramoso; surculis erectis, nitidis, teretibus; foliis arcte imbricatis, erectis, concavis, cordatis longius acuminatis, serrulatis, basi uninerviis, striatis; seta scabra; capsula erecta, lineari-oblonga; operculo elongato-conico.

On Pichincha; near the limits of perpetual snow. *Prof. W. Jameson.* 5th July, 1847.

Lower branches sometimes flagelliform and creeping, the upper scarcely half an inch high, the younger pale yellowish and shining. Leaves closely adpressed, even when wetted. Peristome of sixteen equidistant, lanceolate, pale teeth, marked in the *axis* with a faint opaque line. Capsule very slightly inclined. Differs from L. *tomentosus*, Hook., by the absence of dense down at the bases of the branches, by the scabrous *seta*, by the wider teeth of the peristome, and by the broader leaves.

BRACHYMENIUM, *Schwaeg.*

1. B. *Jamesoni*, Tayl. Caule laxe cæspitoso, erecto, subramoso; surculis basi rufescenti-tomentosis; foliis imbricatis, erecto-patentibus, subsecundis, late ovato-lanceolatis, marginatis, serrulatis, nervo ante apicem evanescente; seta elongata, lævi; capsula erectiuscula, elliptico-cylindracea, lævi; operculo elongato-conico, obtuso.

On Pichincha. *Prof. W. Jameson.* 8th Aug., 1847.

Shoots flattish, pale green, about two inches high. Leaves marginate, but plane at the margins, slightly concave. No male flowers observed. *Outer* peristome of sixteen equidistant teeth, opaque and reddish below, pellucid and white above; *inner*, a coloured membrane with sixteen folds, terminating irregularly. Capsules nearly two lines long. This rivals the noble B. *Nepalense*, Schwaeg. The lid, however, is longer; the leaves have their nerves disappearing before their points, and when dry, are not so much twisted; besides, there is no *apophysis* to the capsule.

HOOKERIA, *Smith.*

1. H. *papillata,* Tayl. Caule laxe cæspitoso, decumbente, subpinnato; foliis imbricatis, subpatentibus, deorsum heteromallis, concavis, late oblongis, obtusis, lineari-apiculatis, denticulatis, dorso papillosis, nervis binis evanescentibus; capsula oblonga, obconice apophysata; operculo rostrato; seta summo apice scabriuscula.

On Pichincha. *Prof. W. Jameson.* 8th Aug., 1847.

Stems three to four inches long; shoots pale green, sometimes yellowish-brown; the longer branches incurved. Leaves very concave, vaulted at the top, hence a shoulder appears on each side of the base of the suddenly elongated *apiculus*; the nerves opaque and brownish. Inner peristome with sixteen perforate *laciniæ,* without any interposed *ciliæ.* Setæ nearly two inches long, deep red. *Operculum* with an opaque conical base, but the *rostrum* is constructed of a thin scariose membrane which is at length shrivelled. A Brazilian species, which we have by favour of Sir William Hooker, is so nearly allied to this, that some botanists may consider it the same: this last is Hookeria *mollis* of Mr. Wilson's MSS., and seems different by the shorter and more pellucid nerves of the leaves, by the leaves, themselves, being more erect, by the shorter *setæ,* by the ovate capsules, wider at their bases, and by the wider branches.

DALTONIA, *Hook.* et *Tayl.*

1. D. *Jamesoni,* Tayl. Monoica. Caule dense cæspitoso, erecto, subsimplici; surculis subcompressis; foliis arcte imbricatis, erectis, late ovatis, acuminatis, medio uniplicatis, nervo evanescente, marginatis, integerrimis, grosse cellulosis; seta scabra; capsula erecta, subæquali, ovata; operculo longirostro, subinclinato; calyptra basi dense laciniata.

On Pichincha; near the limits of perpetual snow. *Prof. W. Jameson.* July, 1847.

Pale yellowish-green. Stems furnished with red branched *villi* below, about one inch high, sometimes dichotomous; branches erect, adpressed, flattened, scarcely wider at their summits. Leaves little altered in position when moistened, flexuose, very wide, their tops incurved; they have along the nerve a remarkably close fold resembling a wing, which can scarcely be opened without breaking the leaf; the margins of the leaves are reflexed. The top of the calyptra is scabrous and dark brown. *Perigonia* minute, with but few leaves, of which the inner are nerveless and obtuse. *Outer* peristome of sixteen linear-lanceolate teeth; *inner* of as many filiform pale *ciliæ*. The stems are more elongated, more equal in thickness, the leaves are far wider, and the calyptra more compound at the base than in D. *splachnoides*, H. et T.

2. D. *longifolia*, Tayl. Monoica. Caule erecto, laxe cæspitoso, subramoso; surculis subcompressis, apice latioribus; foliis imbricatis, erecto-patentibus, flexuosis, lineari-lanceolatis, canaliculatis, nervo evanescente, marginatis, margine pellucido, plano, integerrimo, dense cellulosis; seta scabra; capsula oblongo-ovata, erecta, subæquali; operculo longirostro; calyptra basi dense laciniata.

On Pichincha. *Prof. W. Jameson.* Feb., 1847.

Bright yellowish-green, somewhat shining, about half an inch high; branches subdichotomous, wider at their tops. Leaves somewhat more patent when moistened, their tops acuminate, flat and nerveless; their cells very minute. Inner perichætial leaves acuminate and nerveless. The length of the leaves and their dense structure are distinctive.

CHILOSCYPHUS. *Corda.*

1. C. *fragilifolius*, Tayl. Caule elongato, laxe cæspitoso, procumbente, subramoso; foliis imbricatis, supremis secundis, erecto-patentibus, quadrato-obovatis, antice gibbosis, integerrimis, margine dorsali decurrentibus; stipulis liberis, minutis, ovato-lanceolatis, bipartitis, segmentis extrorsum unidentatis; perigoniis breviter spicatis, subterminalibus.

On Pichincha. *Prof. W. Jameson.* 8th Aug., 1847.

Tufts two inches long, lurid brown. Leaves fragile when wet; the margins of the upper incurved, of the lower plane. From C. *livido-brunneus*, Mont. MSS., this is know by the minuter cells of the leaves, and from C. *integrifolius*, L. et L., by the stipules free of the leaves.

DENDROCEROS, *Nees.*

1. D. *Jamesoni*, Tayl., Pedunculo longe exserto; calyce elongato, apice hinc fisso, crispato; fronde ecostata, laciniato-lobata, marginibus minute crispato-lobulatis, seminibus muricatis; elaterum helice duplici.

On Pichincha *Prof. W. Jameson.* 8th Aug., 1847.

Fronds dark green, black when dry; about two inches wide. Lobes broadly linear, convex, their tops crenulato-lobulate; destitute of mid-rib. Calyces half an inch long, linear, their tops crenulato-lobulate. Peduncle nearly as long as the capsule, or about one inch. Columella hair-like. Seeds muriculate. D. *crispatus*, Hook., differs by the dichotomous and costate fronds, by the shorter peduncles, by the wider capsules and smooth seeds.

BÆOMYCES, *Ach.*

1. B. *Jamesoni*, Tayl. Thallo cartilagineo, laciniato-lobato, albido, subtus concolore, pruinoso, tenui, lobulis linearibus; gemmis squamatis, rotundatis, planis; podetiis elongate obconicis, striatis, dilute coloratis; apotheciis convexis, subundulatis, immarginatis, pallide roseis.

On Pichincha. *Prof. W. Jameson.* 8th Aug., 1847.

About one inch wide, growing on *Musci*. *Podetia* nearly half an inch long. Buds on all the *podetia* expanding into *thalli*. Some of the filaments in the *lamina proligera* moniliate, more are inarticulate. This species yields a fine yellow dye. The cartilaginous *thallus* contradicts the Acharian character, in other respects ours may be mistaken for B. *roseus*, Ach.

Contributions towards a FLORA OF BRAZIL, *being the distinctive characters of some new species of* COMPOSITÆ, *belonging to the tribe* SENECIONIDEÆ. By GEORGE GARDNER, Esq., F.L.S., Superintendent of the Royal Botanic Gardens, Ceylon.

(Continued from p. 90.*)*

RIENCOURTIA, *Cass.*

3280. R. *latifolia*; foliis petiolatis ovato-oblongis vel oblongo-lanceolatis acutis basi obtusis acute serratis 3-vel 5-nerviis utrinque piloso-scabridis, capitulis plurimis in glomerulos terminales collectis bracteatis, bracteis oblongo-lanceolatis acutis extus dense piloso-hispidis, capitulis 8–9-floris, involucri squamis 4 obovatis obtusissimis mucronatis ad apicem ciliatis.

HAB. Dry Campos near Natividade, Province of Goyaz. Dec. 1839.

Herba perennis. Caules plures ex eadem radice, 1½–2½ pedales, parum ramosæ, hispidæ, foliosæ. Folia opposita, petiolata, ovato-oblonga vel oblongo-lanceolata, acuta, basi obtusa, 3–5-nervia, nervis subtus prominulis, acute serrata, utrinque piloso-hispida, 3–3½ poll. longa, 12–15 lin. lata: petioli 4 lin. longi, hispidi. Pedunculi alati, elongati, striati, hispidi. Glomeruli subglobosi. Capitula 2 lin. longa, monoica, 8–9-flora. Receptaculum parvum nudum. Flores *disci* 7–8: corolla tubulosa, obtuse 5-dentata, dentibus pilosis: antheræ inclusæ, basi subsagittatæ: styli complanati, indivisi, inclusi, basi urceolo dentato cincti: achænia abortiva, linearia, complanata, dense villosa, calva; *radii* unico, fœmineo: corolla cylindrica, apice 3-dentata, dentibus pilosis; styli rami duo exserti: achænia suborbiculata, compressa, villosa, calva.

The characters of the only two species of this genus hitherto published, as given by De Candolle, for I have no opportunity of consulting Cassini's original descriptions, are too brief for me to ascertain whether or not any of my four might be referred to one or other of them. The genus is very closely allied to *Clibadium*.

3279. R. *oblongifolia*; foliis breviter petiolatis oblongis obtusissimis, mucronatis basi subcuneato-attenuatis supra medium distanter serrato-dentatis triplinerviis utrinque adpressi-pilosis, capitulis plurimis in glomerulos terminales collectis bracteatis, bracteis ovatis acuminatis extus hispidis capitulis 9-floris, involucri squamis 4 obovatis obtusis mucronatis ad apicem ciliatis.

Hab. Arid bushy places near Natividade, Province of Goyaz. Dec., 1839.

Caules bipedales, adpresse pilosæ, ad apicem aphyllæ. Folia 2–2½ poll. long, 6–7½ lin. lata, membranacea, scabrida: petioli 1½ lin. longi. Capitula 3 lin. longa.

3278. R. *angustifolia*; foliis vix petiolatis linearibus utrinque acutis integris vel distanter subdentatis triplinerviis utrinque adpresse pilosis, capitulis ad apices ramulorum in glomerulos subglobosos collectis bracteatis, bracteis lanceolatis longe acuminatis extus hispidis, capitulis 9-floris, involucri squamis 4 obovatis obtusis mucronatis ad apicem ciliatis.

Hab. Dry Campos near Natividade, Province of Goyaz. Dec., 1839.

Caules ramosæ, erectæ, sesquipedales, scabridæ, foliosæ. Folia 2–3 poll. longa, 2–3 lin. lata, scabrida, venis subtus valde prominulis. Capitula 2 lin. longa.

4249. R. *tenuifolia*; foliis sessilibus angustissimis margine revolutis integris utrinque piloso-scabridis, capitulis plurimis in glomerulos terminales solitarios subglobosos collectis bracteatis, bracteis lanceolatis longe acuminatis extus hispidis, capitulis 8-floris, involucri squamis oblongis obtusis mucronatis ad apicem ciliatis.

Hab. Dry Campos near San Domingos, Province of Goyaz. May, 1840.

Caules ramosæ, bipedales, scabridæ, foliosæ. Folia anguste linearia, 1–2 poll. longa, semilineam lata. Capitula 3 lin. longa.

Melampodium, *Linn.*

3844. M. (*Zarabellia*) *paniculatum*; herbaceum erectum ramosum glutinosum hirsutum, ramis dichotomis, foliis sessilibus subconnatis ovato-oblongis acuminatis basi acutis serrato-dentatis supra piloso-scabris subtus piloso-pubescentibus, pedunculis alaribus hirsutis folio plerumque longioribus, involucri squamis exterioribus oblique subrotundis abrupte acuminatis dorso villosis, interioribus achænia involventibus tuberculatis, achæniis curvato-obpyramidatis apice truncatis et nudis dorso strictis.

HAB. Near Villa de Arroyas, Province of Goyaz. April, 1840. Geraës, *Claussen.*

Herba annua, erecta, bipedalis. Folia 2½–3 poll. longa, 9–12 lin. lata, triplinervia. Capitula 2½ lin. longa. Flores radii 5, tubo brevissimo villoso, limbo profunde inæqualiter bilobo. Achænia 1½ lin. longa.

As a species this will range along with M. *oblongifolium*, DC., and M. *microcephalum*, Less.

WEDELIA, *Jacq.*

3293. W. (*Cyathophora*) *Goyazensis*; caule herbaceo erecto tereti striato hirsuto, foliis petiolatis ovatis acutis vel subacuminatis basi in petiolum cuneato-attenuatis argute serratis triplinerviis utrinque adpresse piloso-hispidis, pedicellis alaribus terminalibusque villosis folio brevioribus, involucri squamis oblongolanceolatis foliaceis disco longioribus hispidis ligulis acute bidentatis, achæniis lineari-oblongis compressis pilosiusculis calyculo denticulato ciliato superatis.

HAB. Bushy places near Villa de Natividade, Province of Goyaz. Jan., 1840.

Herba basi suffruticosa, erecta, ramosa, 3-pedalis. Folia 3½–4½ poll. longa, 1½–2½ poll. lata, supra viridia, subtus pallida. Involucrum 9–12 lin. longum.

Judging from the description this species is near W. *trichostephia*, DC.

3283. W. (*Cyathophora*) *pallida*; caule herbaceo tereti striato hirsuto-hispido ramoso, ramis hirsutis, foliis sessilibus ovato-oblongis acutis basi rotundatis serratis 5-nerviis supra scaberrimis subtus piloso-pubescentibus, pedicellis alaribus terminalibusque villosis folio brevioribus, involucri squamis biseriatis, exterioribus oblongo-lanceolatis acutis foliaceis piloso-hispidis disco brevioribus, interioribus minoribus, achæniis turgidis obpyramidatis rugoso-tuberculatis pilosiusculis calyculo substipitato integro superatis.

Hab. Dry Campos near Natividade, Province of Goyaz. Dec., 1839.

Herba perennis 2–3-pedalis. Folia 2½–3 poll. longa, 12–18 lin. lata. Involucrum 4½ lin. longum. Ligulæ oblongæ, 3-dentatæ, pallide luteæ.

This will range along with W. *lanceolata,* DC. The ligulæ are of a pale yellowish-white colour, and the achænia are sometimes obscurely three or four-sided.

1349 et 1730. W. (*Actinoptera*) *villosa* ; caule suffruticoso ramoso tereti striato villoso, foliis petiolatis late ovatis acuminatis basi truncatis serrato-dentatis triplinerviis supra adpresse piloso-scabridis subtus piloso-pubescentibus, petiolis villosissimis, pedicellis ad apices ramulorum 1–3 folio brevioribus vel interdum longioribus villosis, involucri squamis exterioribus oblongis acuminatis foliaceis disco paulo longioribus, intimis obovatis acutis ciliatis subbrevioribus, ligulis oblongis obscure 3-dentatis achæniis disci exalatis, radiis subtriangularibus, angulis lateralibus alatis, pappo coroniformi dentato, dentibus acutis ciliatis.

Hab. Between Mexico and the city of Alagoas, Province of Alagoas, April, 1838 (1349) ; and common in dry bushy places about Crato, Province of Ceará, Nov., 1838 (1730).

Suffrutex 4–6-pedalis. Folia 4–5½ poll. longa, 2½–3 poll. lata. Involucrum 6 lin. longum.

In the Alagoas specimens the pedicells are longer than in that from Crato, otherwise they are not different.

2219. W. (*Actinoptera*) *Hookeriana* ; caule suffruticoso tereti striato scabrido, foliis petiolatis ovatis vel ovato-oblongis acutis vel acuminatis basi in petiolum cuneato-attenuatis distanter subserrato-dentatis triplinerviis supra adpresse piloso-scabridis subtus piloso-pubescentibus, pedicellis e dichotomia et apice ramorum 1–3 villosiusculis folio paulo brevioribus, involucri squamis exterioribus oblongo-lanceolatis acutis foliaceis membranaceis ciliatis disco longioribus, interioribus obtusis brevioribus ciliatis, ligulis oblongis obtuse bidentatis, achæniis disci vix alatis, radii utrinque late alatis, pappo coroniformi ciliato.

HAB. Moist bushy places near Santa Anna das Mercês, Province of Piauhy. March, 1839.

Suffrutex sub-3-pedalis, ramosus. Folia 4 poll. longa, 15–20 lin. lata, subtus pallida. Involucrum 7 lin. longum.

ANOMOSTEPHIUM, *DC.*

4930. A. (*verum*) *foliosum*; caule fruticoso erecto ramoso, ramis teretibus striatis piloso-scabris, foliis oppositis sessilibus late linearibus utrinque acutis penninerviis subserrato-dentatis utrinque piloso-scabris, pedicellis ad apices ramulorum solitariis, involucri squamis 3-seriatis disco brevioribus, exterioribus ovato-lanceolatis acuminatis adpresse pilosis apice foliaceis squarrosis, paleis acuminatis, ligulis oblongis obtuse bidentatis, achæniis oblongis villosiusculis pappo irregulari dentato piloso coronatis.

HAB. Elevated open rocky places in the Diamond District. July, 1840.

Frutex 3-pedalis. Folia conferta, pollicaria, 1½ lin. lata. Pedicelli 3–6 lin. longi. Involucrum 4 lin. longum. Capitulum flavum, ligulis late oblongis, 4 lin. longis.

The genus *Anomostephium* seems made up of very incongruous materials, it being probable that the four species which De Candolle has placed in it are referable to as many different genera. The ligules are said in the generic character to be neuter, but in A. *buphthalmoides*, DC., figured in Delessert's Icones, they are represented as female; and if correctly so, then the plant is evidently a Medelia; while A.(?) *oblongifolium*, DC., seems to be a species of *Viguiera*, judging from his description of the pappus of the immature achænia. In everything but the pappus the present plant is a *Leighia*, which genus I now reduce to a section of *Viguiera*.

4932 (bis). A. (*dubia*) *angustifolium*; caule subramoso erecto tereti hirto folioso, foliis oppositis sessilibus lineari-lanceolatis utrinque attenuatis triplinerviis integris aut subdentatis utrinque sparse villosis, pedicellis terminalibus solitariis hirsuto-villosis folio longioribus, involucri squamis 2-seriatis, exterioribus lineari-oblongis obtusis vel acutiusculis foliaceis laxis integris subhirsutis disco longioribus, intimis linearibus acuminatis membranaceis glabris, ligulis lineari-oblongis bidentatis, achæniis oblongis compressis pilosiusculis pappo irregulari piloso-dentato coronatis.

HAB. Rare in dry open Campos at the foot of the Sierra de Piedade, Province of Minas Geraës. Sept., 1840.

Herba perennis. Radix lignosa. Caules plures, vix pedales. Folia 2 poll. longa, 3–4½ lin. lata. Involucrum 7 lin. longum. Capitulum flavum, ligulis pollicem longis.

This plant is a *Viguiera* in everything but the want of the elongated setæ of the pappus.

GYMNOPSIS, *DC.*

4929. G. *fruticosa*; fruticosa erecta ramosa, ramis teretibus striatis adpresse piloso-hirtis ad apicem conferte foliatis, foliis vix petiolatis oblongo-lanceolatis acutis penniveniis margine integris revolutis supra sparse piloso-asperis subtus adpresse tomentosis, pedicellis terminalibus solitariis hirsutis folio brevioribus, involucri squamis 3-seriatis lineari-oblongis obtusis subæqualibus laxis, exterioribus subfoliaceis hirsutis, intimis glabriusculis ciliatis coloratis, ligulis oblongis obtuse bidentatis, achæniis junioribus linearibus villosis pappo calyculato integro ciliato superatis.

HAB. Summit of the Serra de Piedade, Province of Minas Geraës. Sept., 1840.

Frutex 3-pedalis. Folia opposita, 12–15 lin. longa, 4½ lin. lata, supra viridia, subtus pallida, venis subtus prominulis. Capitula 6 lin. longa, lutea.

This plant seems to differ from the true species of *Gymnopsis* in its fruticose habit, pennivenous leaves, and entire, not dentate, pappus; but these differences are not of sufficient importance to separate it from the genus.

3846. G. *Kunthiana*; caule herbaceo erecto subramoso dense piloso-pubescente, foliis petiolatis ovatis acutis basi truncato-subcordatis trinerviis minute serrato-dentatis supra adpresse pilosis subtus piloso-tomentosis, pedicellis terminalibus pilosis, involucri squamis biseriatis, exterioribus oblongis obtusis foliaceis disco longioribus, intimis membranaceis minoribus ligulis obtuse bidentatis, achæniis obovatis obscure tetragonis glabris pappo vix dentato brevissimo coronatis.

Hab. Dry bushy places near Conceiçao, Province of Goyaz. Feb., 1840.

Herba perennis, 2–4-pedalis. Folia opposita, 3–5 poll. longa, 18–22 lin. lata: petioli 6–8 lin. longi. Capitula flava.

Near Gym. *rudbeckioides*, DC., but differs from it in being erect, not twining, and in having terete, not angular, stems. The ligules in the present species are, besides, more numerous.

3294. G. *microcephala*; caule herbaceo erecto ramoso pubescente, foliis petiolatis ovatis acutis basi in petiolum cuneato-attenuatis triplinerviis serratis utrinque sparse adpresse pilosis, pedicellis terminalibus 2–3 folio multo brevioribus lanceolatis obtusis foliaceis pilosis disco paulo longioribus, intimis minoribus, ligulis obtuse bidentatis, achæniis obovatis pubescentibus demum muricatis pappo coroniformi integro substipitato superatis.

Hab. Road-sides and waste places, common near the Villa de Natividade, Province of Goyaz. Jan., 1840.

Herba annua bipedalis. Folia opposita, 2½ poll. longa, 12–15 lin. lata. Involucrum 3½ lin. longum.

Wulfia, *Neck.*

3295. W. *suffruticosa*; caule suffruticoso ramoso scandente, ramis angulato-striatis scabris, foliis petiolatis ovato-oblongis acuminatis basi acutis grosse et argute serratis utrinque scabris, pedicellis ternis ad apices ramorum et ramulorum, involucri squamis exterioribus lanceolatis acuminatis hispidissimis intimis paleiformibus, paleis oblongo-lanceolatis acuminatis apice vix incurvis, ligulis 8–12 involucro subduplo longioribus.

HAB. Woods near Natividade, Province of Goyaz. Jan., 1840.

Suffrutex subscandens. Folia 3½–5½ poll. longa, 15–20 lin. lata, subtus grosse reticulato-venosa, venis valde prominulis: petioli 5–7 lin. longi. Ligulæ oblongæ obscure dentatæ, flavæ.

This comes nearer to *W. maculata*, DC. than to any other described species, but differs from it in the stem not being tetragonous, and in the shape of the leaves.

509 et 5525. W. *longifolia*; caule scandente hexagono scabro, foliis petiolatis ovato-oblongis longe acuminatis basi obtusis serratis supra scabris subtus pubescenti-tomentosis, pedicellis terminalibus ternis, pedicello medio breviore, involucri squamis exterioribus oblongo-lanceolatis acutis hispidis, interioribus paleiformibus, paleis lanceolatis apice pungentibus vix incurvis, ligulis 8 circiter involucro duplo longioribus.

HAB. Bushy places on the Organ Mountains, at an elevation of about 3,000 feet, March, 1837 (n. 509); and at Jacarè near Rio de Janeiro, Dec., 1840 (5525).

Herba basi sublignosa. Folia 6–8 poll. longa, 20–30 lin. lata, supra viridia, subtus pallida, venosa, venis prominulis: petioli 8–10 lin. longi, villosi. Ligulæ oblongæ, obtusæ, bidentatæ, flavæ.

Very distinct from any described species, but in its technical characters coming nearest to *W. oblongifolia*, DC. The leaves in n. 509 are less tomentose than in the other number.

OYEDÆA, *DC.*

2216. O. *angustifolia*: ramis asperis villosis, foliis subsessilibus anguste lanceolatis vel lineari-lanceolatis utrinque acutis integris triplinerviis utrinque adpresse piloso-scabris junioribus petiolisque sparse villosis, involucri squamis exterioribus oblongo-lanceolatis acutis foliaceis hirtis, interioribus minoribus membranaceis.

HAB. Sandy Campos near the city of Oeiras, Province of Piauhy. April, 1839.

Herba basi sublignosa. Caules plures ex eadem radice, decumbentes, sesquipedales, ramosæ. Folia opposita, 1½–2 poll. longa, 3–6 lin. lata. Pedicelli terminales, 4–5 poll. longi, villosi. Involucrum 3-seriale, squamis exterioribus 4½ lin. longis. Ligulæ 8, obtusissimæ, integræ. Achaenia *radii* abortiva, linearia, compressa, margine ciliata, pappo 3-aristato aristellisque subconnatis superata; *disci* compressa, subalata, cuneata, pilosa, apice profunde lateque emarginata, 2-aristata, aristellis minimis basi concretis hinc inde interjectis.

ECHINOCEPHALUM. *Genus novum.*

Char. Gen. *Capitulum* heterogamum, floribus *radii* ligulatis neutris 1-seriatis, *disci* tubulosis 5-dentatis hermaphroditis. *Involucri* 3-seriati squamæ subæquales exteriores subfoliaceæ. *Receptaculum* conicum, paleaceum, paleis complicatis longe acuminatis pungentibus membranaceis persistentibus. *Antheræ* nigricantes, subexsertæ. *Styli* rami hispidi, appendiculati. *Achænia radii* abortiva, obovata, compressa, pappo 5-aristato, aristis setiformibus inæqualibus scabris caducis, superata; *disci* obovata, compresso-subtetragona, pappo 12–16-aristato, aristis inæqualibus caducis coronata.—Herbæ *annuæ Brasilienses Oyedææ facie,* ramis *tetragonis adpresse piloso-scabris,* foliis *petiolatis, inferioribus oppositis, superioribus alternis, ovatis vel lanceolatis, acuminatis, grosse serrato-dentatis, utrinque appresse piloso-pubescentibus,* capitulis *pedunculatis, subcorymbosis, demum subglobosis,* floribus *luteis.*

The three plants on which I have founded this genus are allied to *Oyedæa*, agreeing with it in habit, and in the structure of the flower, except the winged achænia of the florets of the disk, and the setæ of the pappus, which in the present plants are less unequal and more fragile. That there is, however, a tendency in the achænia to be winged, is shown by a very short tooth-like appendix at the top of each of the angles. With *Perymenium* it agrees in the nature of the pappus and in other points, but differs in having ligulate florets.

1728 et 3848. E. *latifolium*; ramis adpresse piloso-scabris, foliis longe petiolatis ovatis acuminatis basi subcuneatis inæqualiter grosse serrato-dentatis 3-nerviis utrinque adpresse piloso-pubescentibus scabridis, pedunculis terminalibus subcorymbosis, involucri squamis exterioribus lanceolatis acuminatis hispidis, interioribus paleiformibus.

Hab. In cane-fields near Crato, Province of Ceará, Oct., 1838 (1728); and in similar situations near Arrayas, Province of Goyaz, March, 1840 (3848).

Annuum, 1½–3-pedale, erectum, ramosum. Folia opposita, summa alterna, 3–4⅓ poll. longa, 1–2½ poll. lata: petioli villosi. Involucrum 3 lin. longum. Ligulæ late oblongæ, obtusissimæ, obtuse bidentatæ.

1729. E. *lanceolatum*; ramis adpresse piloso-scabris, foliis petiolatis ovato-lanceolatis versus apicem valde attenuatis acuminatis basi obtusiusculis serratis tri- vel subtriplinerviis utrinque adpresse piloso-pubescentibus scabridis, pedunculis terminalibus subcorymbosis, involucri squamis exterioribus oblongo-lanceolatis acutis hispidis, interioribus paleiformibus.

Hab. Near Aracaty, Province of Ceará. Aug., 1838.

Annuum, 2–3-pedale, erectum, ramosum. Rami superiores dichotomi. Folia opposita, summa alterna, 3–4½ poll. longa, 6–12 lin. lata: petioli 4–6 lin. longi, villosi. Involucrum 3 lin. longum. Ligulæ late oblongæ, obtusissimæ, obtuse bidentatæ.

This differs principally from the preceding species in its stouter habit, much narrower leaves, and less acuminated involucral scales. The acicular points of the scales of the receptacle are also one half shorter.

3848 (bis). E. *angustifolium*; ramis subscabris, foliis petiolatis lineari-lanceolatis utrinque attenuatis subtriplinerviis distanter dentatis utrinque adpresse piloso-pubescentibus scabridis, pedunculis terminalibus subcorymbosis, involucri squamis exterioribus lanceolatis acuminatis, interioribus paleiformibus.

Hab. Near Sapê, Province of Goyaz. Feb., 1840.

Annuum, bipedale, erectum, ramosum. Folia 3–6 poll. longa, 6–10 lin. lata: petioli villosi. Involucrum 3 lin. longum.

This differs from both the preceding species in its much narrower leaves, which are besides truly dentate, not serrate.

SERPÆA. *Genus novum.*

Char. Gen. *Capitulum* multiflorum heterogamum, floribus *radii* neutris ligulatis 1-serialibus, *disci* tubulosis hermaphroditis. *Involucrum* hemisphæricum, squamis 3-seriatis subæqualibus, exterioribus foliaceis ovatis obtusis reticulatis serrato-dentatis, intimis oblongis obtusis membranaceis. *Receptaculum* conicum paleaceum, paleis lineari-oblongis obtusis achænia amplectentibus. *Styli* rami exserti, subulati, hispidi. *Achænia radii* triquetra vix subulata, angulis in aristam persistentem productis, dentibus setiformibus paucis interjectis; *disci* compressa, 2-aristata, vix alata.—Herbæ *perennes Brasilienses habitu* Helianthi, ramis *teretibus,* foliis *oppositis, petiolatis, oblongis vel ovatis, serrato-dentatis, triplinerviis, scabris,* capitulis *longe pedicellatis, terminalibus, solitariis vel ternis,* floribus *luteis.*

In the structure of the achænia and pappus, the two plants on which I have established this genus, coincide with *Lipochæta,* but they cannot be associated with it on account of their neutral ligules. Their nearest affinity seems to be with *Oyedæa,* from which they are distinguished by their conical receptacle and the nature of their achænia.

I have named the genus in remembrance of Dr. Serpa, who was Professor of Botany in the College at Olinda during my visit to Pernambuco, a learned and amiable old gentleman, passionately devoted to the study of the medicinal plants of his native country.

3852. S. *ovata*; caule ramoso, ramis pubescenti-tomentosis, foliis petiolatis late ovatis utrinque obtusis serratis triplinerviis supra scabridis subtus pubescenti-tomentosis, pedicellis terminalibus ternis, involucri squamis exterioribus in appendicem foliaceam subrotundam reticulatam tomentosam productis, intimis ovato-oblongis obtusis glabris.

HAB. Dry upland Campos near Arrayas, Province of Goyaz. April, 1840.

Herba perennis, erecta, ramosa, bipedalis. Folia opposita, 2–3 poll. longa, 15–21 lin. lata. Pedicelli tomentosi, 3 poll. longi. Capitulum subglobosum. Involucrum 4 lin. longum.

(*To be continued.*)

BOTANICAL INFORMATION.

Extracts from the private letters of DR. HOOKER, *written during a Botanical Mission to* INDIA.

(*Continued from* p. 268.)

On the following day I determined upon a trip into the Desert, to see the *Fossil Forest,* as a large tract of country covered with fossil wood is called. Several of the officers of the "Sidon" joined me, of which I was very glad, for they kindly undertook all the provisioning for the day. We started very early, mounted upon jackasses: I also took a servant to carry my traps, together with two mules and attendants to bring back specimens of the wood. Though few plants were procurable, I was anxious to make observations on the temperature of the soil and dryness of the Desert, that I might know how near to the starving and burning point vegetation would exist, as supplementary to my many observations in the Antarctic Expedition of how much cold they can bear.

Our course lay to the south of Cairo, along the ridge of hills at whose Nileward termination the city is built. These hills are of limestone, and so were the first few miles of desert we traversed. We emerged from the town at the citadel, about two hundred feet above the Nile, the rest of the town, and Great Desert itself. The sun was rising when we passed the Palace, and a very grand sight it was. It rose from the eastern Desert, hot, orange-red, and scorching to behold. A few strips of cloud on the horizon crossed its upward path, and through them was darted a flood of great beams slanting along the parched soil, dancing on the polished alabaster Mosque close by us, and shooting across the Nile to the Pyramids on the far-west horizon, some ten miles off. To the east, south, and south-east, stretched a fiery desert; below, we saw the town of Cairo bristling with minarets, and the long shining Nile, wending its way from south to north through emerald-green pastures, gardens, Date-groves, and scattered white buildings, its surface spotted with latteen-sailed boats. This green belt reached to the very base of the Pyramids, and was there met by another apparently endless desert, covered with a light haze, and backed by low hills of sterile sand. After a little space, another desert horizon rose with the light far to the south, the Nile again glanced in it like a twisted silver wire, its course marked by still other pyramids, so distant as to appear no more than dusky triangular spots. Beyond these, the site of Thebes, Memphis, Luxor, Edfou, the far-away Cataracts, and Meroe are seen only in the imagination. Of the appearance of the Pyramids themselves from this point one can form no idea: they are not beautiful, and much of their interest is derived from association; but they are so strongly interwoven with the earliest recollections of our species, and of our school-education, that it is impossible to keep the eyes or thoughts from them.

For the first few miles out of Cairo there was scarce a trace of vegetation, or merely a few exposed stems here and there above the naked soil, wholly destitute of leaves. This is the sterile season, and past even seed-time in the Desert, which is, of course, not affected by the inundations of the Nile. About five or six miles south of Cairo the scenery changes totally, the country being more broken up into broad valleys with steep cliffy piles of limestone on each side, and every here and there a little vegetation, *Zygophylleæ*, *Rutaceæ*, *Capparideæ*, a spiny cruciferous plant, some tufts of grass, and a *Hyoscyamus*, full of leaf all the year round, brilliantly green, and very succulent, which resembles a *Chenopodium*, and spreads straggling along the ground. Some *Zygophylleæ* are also green; but the few other species I saw were small-leaved, withered things. Of trees and bushes there are none. All the soil is limestone rock, with a profusion of sand and pebbles, and occasionally fragments of fossil-wood. As we proceeded, the bits of fossil-wood became more and more frequent and larger, till, about eight or ten miles S. E. of Cairo, the whole pebbly and rocky soil of the plain part of the Desert consisted of fossil-wood, chiefly rolled pebbles and fragments, but now and then huge trunks, prostrate and half-buried in the sand, always broken up into truncheons. Most of them were heaped together in the greatest confusion:

more rarely, individual trees lay isolated, frequently 70 feet long, some 120, and it is said even 140. Their colour is generally dark reddish-brown: they are all chalcedony and agate of a coarse description, with the rings of the wood well preserved. The sandy limestone (full of shells) and soil of the Desert are white; so that this fossil vegetation contrasted curiously with the general appearance of the country. Here the Pacha had sunk a pit for coal, sapiently concluding that so much fossil-wood aboveground indicated no less below. He however did not get through the limestone rock, which is subjacent to the formation to which I presume the fossil-wood belongs. Contrasted with the surrounding sterility, this record of a once luxuriant vegetation is a very impressive object, for it is not confined to a few miles only of Desert, but (I am given to understand) extends forty or fifty in one direction. I do not at all suppose that these forests ever characterized the Desert, or the land now replaced by desert, in its present relation to the general features of Egypt. On the contrary, I expect that the fossil-trees were imbedded in layers of conglomerate and sandstone which have been gradually destroyed by the ocean, leaving the silicified trees to resist, for the greater part, the action of that surf by which the softer rock was triturated, forming the sand and pebbles of the Desert. About one hundred miles above Cairo the sandstone rocks commence and the limestone ceases; and as on the Nile behind Cairo detached masses of the same sandstone rock as the statue of Memphis is cut from occur, so it appears probable that this pebbly bed with fossil-trees belonged to that series of rocks, all of which, south of lat. 29°, are washed away, leaving only the agatized trees, all grievously water-worn, many being ground up with the sand into pebbles. A white snail was very abundant everywhere, feeding on the *Zygophylla* and cruciferous plants. This mollusk does not occur south of 29°, i. e., of the limit of the limestone.

After lading my sorry beasts with as many specimens as they could conveniently carry, we turned back and arrived late in the evening at Cairo, thoroughly tired, drenched with perspiration, and very shaken with the long donkey-ride. My plants amounted to six species in all, none different from what I afterwards saw in crossing from Cairo to Suez. Besides the pleasure I derived from the wonderful Fossil Forest, the first peep of anything so novel as the Desert and its concomitant features was highly gratifying. Everything was new: the sky and the atmosphere were unlike those of any other part of the world, and did not appear as if they extended over a soil where either animal or vegetable life could exist. In the limestone desert I had no wish to tarry; but I should still enjoy a visit to the sandstone wastes of Middle and Upper Egypt, which are probably yet more barren, and accompanied by moving sands, of which we here see nothing.

On re-entering Cairo we passed the Tombs of the Caliphs, formerly wonderful for their eastern beauty and ornament, and still presenting immense and beautifully decorated Mausolea, but all falling to ruin. In the moonlight they are striking objects, from their peculiar character and the loveliness of their situation. The sunset over the Pyramids was as glorious as the sunrise, and as fiery hot; this time, however, we had the green groves and cool-looking palaces of the Pacha at Shoobra in the fiery circuit. We waited outside the gates to witness the full effect of the moon on the city, citadel, minarets, and distant pyramids; but the devotional feelings of my donkey (who seemed much impressed by the tombs of the Caliphs) prevented my enjoying thoroughly the view. The entrance to the town was through a once magnificent gate, much ornamented, and very grand-looking in the twilight, but surrounded by so much wretchedness, squalor, and filth, that it was impossible to bestow my admiration on it.

On the following day I was engaged to dine at the Consul-General's, a brother of the Honourable Captain Murray, R.N., our acquaintance at Richmond Park, and had barely time to dress, when I received a message from Lord Dalhousie informing me that he had determined to start at 8 o'clock that night. The fact was that, through some mistake of the Telegraph, the Transit passengers were supposed not to have arrived the night before at Alexandria. All the luggage had been forwarded, and I was in consternation, having only two hours to pack up, to send my fossils home, and go to the Consul's, whence we were to start. We were prohibited taking anything but a tiny carpet-bag a-piece; I therefore hired a fleet dromedary for my goods (my heavy things had gone to the palace on arriving, and were forwarded with Lord Dalhousie's). On arriving at the Consul's just in time, I found Lady Dalhousie had a dromedary provided for her extras, which would convey some of my baggage; and the kindness of the suite, especially Dr. Bell, induced the Transit officers to give us an additional van, so that I got all taken on with us. Lord and Lady Dalhousie dined in their travelling garb; and I did not scruple to show myself at the Consul's, where an immense crowd was assembled in hopes of spending an evening with the Governor-General. All the nobility were there, wearing splendid jewels and uniforms, besides many European ladies and gentlemen in their own or in Egyptian costumes. I never was so glad in my life as when I got my things all stowed away, though at the expense of relinquishing my scanty collection and all but some sheets of small-sized paper for the Desert and Aden. A few minutes later (except the Governor-General had waited or left a van for me), and I should have had to go across on a dromedary, and been shaken to small pieces.

Our departure by cresset and torch light was very pretty: we were surrounded by Orientals in all costumes, curious-looking Egyptian officers of every rank from the Pacha's agents down to the camel and van-drivers. Lord and Lady Dalhousie mounted a beautiful barouche, as good as ever *the Park* saw, with six Arab horses and two outriders, and dashed off at full speed, the cressets and torches speeding on before through the narrow streets, whipping everybody and everything in the way. The vans, in which we all followed, held four a-piece: they resemble exactly short Omnibuses or long Minibuses, but have only two wheels with broad tires, and four horses each. A cad stands on the step behind: an Egyptian drives at a furious gallop, equipped with a red Fez cap and long whip. In the first van were Dr. Bell and myself with my luggage, so arranged that we could lie along.

I had a plaid for the night, and my two barometers slung round my neck. Bell, an old Indian, who is always chilly, was bundled up in all imaginable clothes, European and Oriental. We had no refreshment but claret, which owing to our hurried departure was my sole share of the Consul's dinner. In the second van were Fane, Courtenay, Captain Henderson, and our Dragoman, who belonged to the Transit office. In the third, the butler, coachman, lady's maid, and a native (Hindû) woman, an Ayah or servant. This was all our force. For the first part of the road we were terribly jolted; and I began to fear it was too true that no one could transport barometers safe (mine are so yet) by the overland route. We stopped every three or four miles to bait or change horses. The night was bright starlight and clear, and we were all in excellent spirits. The stations are large rambling buildings, lone houses in the Desert, with never a tree or other dwelling near them: they are white-washed, one or two stories high, generally one, and amply supplied with beer, wines, and all sorts of eatables, just now when the mails are passing: at other times nothing is to be had. Our whole journey from Alexandria to Suez was at the Pacha's expense (except my own when living at Cairo), and we were certainly handsomely feasted, housed, and honoured, and also transported, considering the country we passed through. Lord Dalhousie gave a most liberal "Backsheesh" to the various servants, for the time from our leaving the "Sidon" on Sunday mid-day, until arriving at Suez on the following Friday afternoon.

At 5 o'clock in the morning we came to a half-way house, and halted for two hours. I walked out, as soon as day dawned, at a quarter past six: the Desert was a large bed of gravel, all pebbles as far as the eye could reach, except when the long, low, steep piles of limestone occurred, and these were far off. The pebbles were sometimes arranged in lines of heaps, having sandy intervals, whereon were scattered plants of *Hyoscyamus*, some Grasses, *Rutaceæ*, *Capparideæ*, *Heliotropium* (?) and *Zygophylla*. Altogether there were not five individuals of any kind to an acre of surface. The soil was chilled by nocturnal radiation, and the pebbles were covered with dew of only 44° temperature, the air in the shade being 47°. In digging down, the temperature gradually rose one degree for every inch down to ten inches, beyond which I could not dig. Even in this winter-time, I found the sun's rays give a heat of 100° to the soil; so that the poor plants have to undergo in winter a change of 56° every day. Here the only water they get is by the dew forming on them during the night. Unhappy plants! supposing their feelings to be like ours, who desire to drink most when most heated.

At 7 o'clock, we breakfasted and were off again. The sun soon became powerful, and clouds of dust entered our van, almost suffocating the inmates. I got out for a few minutes at every stage, and saw the poor horses covered with sweat: the moment they were unharnessed, they threw themselves on the ground, and rolled in the sand in ecstacy. I could not help thinking of the Prophet's injunction in the Koran, that the Faithful should wash in the sand where no water was to be procured. We passed some little Oases, a few yards long, sparkling with the *Hyoscyamus,* and here and there a solitary stag-headed inclined *Acacia*; but we never stopped near these less sterile spots.

We had been gradually ascending from Cairo, and at forenoon of Friday we reached the highest ground on our road (800 or 900 feet, perhaps,) between the Nile and the Red Sea. Here high ridges of red mountains appeared, their long precipitous sides all cut up into shallow ravines, dreadfully rugged, rocky, and barren. From the height I saw the Red Sea lifted up by refraction long before we sighted it really, and the mountains of the peninsula of Sinai and Tor on the opposite side of the gulf of Suez: all deeply interesting objects, especially to one who had been accustomed to much novelty of a totally different character. Except a few insects (*Grylli,* &c.,) and occasionally a herd of antelopes, there is no animal life in these parts of the desert. Now and then, however, solitary Arabs or small encampments may be seen, surrounded by dromedaries and packages of merchandize. These Arabs are an unruly set, and not remarkable for their attachment to the Pacha, whose road from Cairo to Suez they are heavily bribed to keep in some sort of order. In many places the latter is really good, as where the flats of pebbles are broad and long, from which the Arabs remove the large stones, though so long only as they are paid for doing it, for as soon as the money is stopped, they will replace all the biggest stones, and thus render the track impassable.

From the highest level, to the Red Sea at Suez, is one uninterrupted slope of eight miles long, apparently so uniform and smooth that you might fancy rolling a cannon-ball from the top into the sea: it is uniformly covered with pebbles and rounded lumps of rock, as big as the head. The *Colocynth* was the only plant I saw here, and that very sparingly: it straggles, and is of the same hue almost as the soil, the great yellow apples alone betraying its existence. The valley, or rather flat slope, is many miles broad, and bounded to the south by high rugged hills, hot, red, and hazy: it is, indeed, a howling wilderness; and the desert of Sinai opposite looked no better.

There was scarcely a boat (but the steamer) visible on the sea; and Suez itself on the shore wore a truly desolate appearance, with no green thing near it. At 4 o'clock we entered the town, a miserable collection of mud and stone huts, with a crazy Mosque, and a large white hotel on the sea-brink, at which we were set down.

This being the position of the passage of the Children of Israel, we could not help looking about and trying to grasp some natural feature that might afterwards vividly recall the spot, but there was none: looking north, an arm of the sea wound up to where a canal in the more glorious days of Egypt connected the Nile and the Red Sea; a few low hills there bounded the horizon. Westward lay the unbroken sweep of Desert we had bowled along at full gallop a few minutes before; southwest, the rugged hills which characterize a great part of the western shore of the Red Sea. To the east, the water was about two miles across or thereabouts, bounded by a long flat, from which rise the mountains of the peninsula of Sinai. Due south, the unruffled and unbroken waters of the Red Sea stretched away, far as the eye could see, with three steamers lying a few miles off the shallows which surround Suez. These were the "Precursor" of the Peninsular and Oriental Company waiting the passengers from England, the "Semiramis," H.E.I.C. Navy, which had brought Sir C. Napier from Bombay, and would have taken us to Calcutta had we come before the arrival of the "Moozuffer," a finer vessel despatched for us.

I could find no vegetation of any kind about Suez, either on land or at sea; all is (at this season) utterly sterile. Our inn, though large, was poor, and offered miserable accommodation for Lady Dalhousie, who was greatly fatigued. At 10 o'clock, P.M., the Transit passengers began to arrive, one hundred and thirty in all, in detachments of six or eight vans every four hours. In the first were no friends of mine. At 2 or 3, A.M., the second detachment brought Col. Hearsey and son; at 8, A.M., our Edinburgh friends arrived, whom I was delighted to meet again.

Lady Dalhousie was recovered enough to go on board at 4 o'clock, P.M., and after the usual expenditure of gunpowder, we got under weigh at 6, and sailed rapidly down the Red Sea. This is a noble ship, as large as the "Sidon," but we are shamefully accommodated, the Indian Government having made no sort of arrangement whatever for us. Capt. Etherally gives up everything for Lord and Lady Dalhousie, whose accommodations, though confined, are splendidly fitted and ornamented: he has also provided a magnificent table, sumptuous in every way. The officers are agreeable, and we are, in everything but accommodation, very comfortable. This is in every respect a man-of-war, the Indian navy being a very small force, similarly constituted and officered with the Royal navy.

The north part of the Red Sea, as far as the island of Jibbel Zeer, is totally devoid of interest, except the view of Mount Sinai. The winds were northerly, as far as 20° lat., then light aud variable, and the weather oppressively hot and sultry until about 16° or 17° lat., where cooler southern breezes prevail, blowing stronger as you approach the Strait, with a nasty sea running. At about 20° lat. a good deal of *Sargassum* is always seen, retained there (I expect) by currents or winds, as in the "*Sargasso*" Sea.

The islands we passed were masses of cinders and scoriæ, red and black, quite barren and fearfully inhospitable, with shores steep to the water's edge: all are volcanic cones. We saw none of them near the shore, where coral reefs occur, which render the southern part of the sea highly dangerous. During the last two or three days on the Red Sea, it blew very strong, and we lost our boatswain overboard, who was struck by the paddle-wheel and killed on the spot. The only feature of interest was some patches of red scum, probably of animal matter, tinged by the confervoid plant described by Montagne in the Annales (*Trichodesmium erythræum,* I think he calls it); it was far too bad weather to get any, but it is frequent here, and said to be equally so in the Persian gulf: it is also reported to be phosphorescent at night. In the afternoon of the 17th, we passed Mocha, a long town of white houses and minarets close to the sea, backed by rugged, barren mountains. At 7 o'clock the same night, we passed through the famous Strait of Babel Mandeb, by a narrow passage, a quarter of a mile wide, between the east mainland of Arabia and a flat island, and entering the Indian Ocean we steamed on to Aden, arriving on the forenoon of the 18th. All the Indian surveying officers, of whom there were several on board, agree that the name *Red* Sea is derived from that of the Nubian shore, *Raid* or *Red*, and not from the occasionally discoloured waters.

I have been much interested with some of the phenomena of the Red Sea. The winds always blow up and down it, a fact which is not wonderful, though the southern end is in the N.E. and S.W. monsoon, and the northern end within the westerly wind limits. The curious thing is, that the north wind blows all the year round, from Suez to about 20° S. lat., and the south wind nearly all the year from the Straits to Jibbel Zeer island, between which is a broad belt of calms and variables with hot weather and much more vapour than at either extremity. Again, though the north winds always prevail from Suez southwards to 20° lat., all that portion of the sea is higher than the middle or lower part, and twenty-four feet higher than the Mediterranean. It is also much salter than any other part, or than any other sea in the East, the saltness decreasing from Suez to 20° lat., where and from whence to the Straits the sea is no salter than the Indian Ocean, which does not differ from the Atlantic or Pacific.

Aden, Dec. 19th.

Aden is one of the most remarkable places I ever saw, and I only wonder that so little has been heard of it. It is a great, black, barren volcano, long extinct and of great age, starting abruptly from the ocean opposite the flat shore of Arabia, with which it is connected by a long, low, flat spit of sand. To the west of it is a smaller, but somewhat similar, peninsula of rugged rocks. They are like to the volcanic islands of the southern part of the Red Sea and some parts of the coast of Africa, but altogether different from the S.W. end of Arabia. The long low beach is richly wooded with Acacias, Dates, and Mangroves, I am informed; but it is impossible to land there without being taken prisoner by the Arabs, whom we deprived of Aden. Ships do not lie off the shore, but at the N.W. end of the peninsula, and sheltered from the N.E. monsoon now blowing strong; and there are the coal depôts, a solitary hôtel, and one or two houses of officials. The peninsula is one mass of volcanic rock, 1,700 feet high, a very ancient volcano, in short, whose crater is broken down to the eastward, where the town is placed. In this respect it resembles St. Helena, but is as sterile to look at as Ascension, or more so; for the top of Green Mountain (in Ascension) is *green*; while here, except in a few flat places near the coast, no green thing is to be discerned from the sea. Quite three-fourths of the rock are inaccessible, the upper part consisting of a wall extraordinarily jagged and serrated, several miles long, many parts of which are no broader than a horse's back. This wall sends off spurs; so that take the peninsula where you will, you have a full front; and cut it down where you may, there is always a pointed perpendicular section. The wall forms the rim of the crater and is all but inaccessible; the slopes and land at the base are all volcanic cinders, strata of lava, dykes of basalt, and such like. Upon the whole, it is the ugliest, blackest, most desolate, and most dislocated piece of land, of its size, that ever I set eyes on; and I have seen a good many ugly places.

* * * * * *

Aden we took from the Arabs a few years back, and are now fortifying it as strongly as Gibraltar, which in position it resembles. At no very distant period it was held by the Turks, who relied much upon it, and have left wonderful constructions in all parts of the Peninsula, in the shape of tombs, aqueducts, the remains of a large town now buried underneath the miserable Arab village of Aden, and more especially fortifications on the all-but inaccessible crests of the hills, with stone roads and causeways leading to them, constructed with inconceivable labour, as it is supposed, by Jews, many of whom were kept as prisoners and slaves at Aden. The Sublime Porte still claims a jurisdiction over all Arabia, to which the Arabs are, of course, indifferent, detesting the Turks and Franks equally.

We lay off the west end of the peninsula, the cool end of the island, where Capt. Haines, Ind. Navy, resides, and superintends the arrangements for vessels, &c. He is also the E.I.C. political Agent or Resident in the place, and acts as Governor. The town is now half Arab and half European, from the number of troops, and occupies the base of a large valley bounded by inaccessible black crags on all sides, open to the south and to the east, and defended to the west by a very narrow fortified pass, through which you go when following the excellent road from the "Point," where we lay, to the town or cantonments.

On our arrival we were surrounded by shore-boats, full of a race of negroes from the opposite coast of Africa, "Soumalis," who are engaged with Hindoos and a few Arabs as servants on the peninsula. These "Soumalis" are all but naked, and left their boats for the water, in which they swam like ducks, diving for sixpenny-pieces, which we chucked overboard, some dozens scrambling underwater for possession. Captain Haines provided quarters for us all at his house, a set of long rambling cottages with verandahs, built, as is every house here, of wattle and plaster, and swarming with rats and mosquitoes. We managed tolerably well, however, during our short stay. At about 2 o'clock the "Precursor" arrived, and as soon as I could get away I went on board, and saw our friends Mr. and Mrs. S., who came on shore for a donkey-ride in the cool of the evening. The steepness and ruggedness of the black crags, utterly devoid of vegetation, the curious ridges of Trap, and beds of scoria, Lava, and Pumice, which extend from their bases to the sea, and the wild disconnected rocks that rise here and there from the ocean close to the shore, render the scenery most striking, and in the moonlight awfully grand, more especially in twilight or sunset, when the exquisitely delicate colouring of the sky and the few scattered clouds that speckle it, contrast singularly with the wild features of the land. In the gravelly hollows a very few plants are seen, woefully wide apart, and never in sufficient quantity to give a verdant hue to even an acre of ground at this season; but I am told that grass appears in spring. The most conspicuous plant is a bushy green *Capparis* (Caper) and next a large *Reseda* (Mignonette), the commonest plant in the island: next comes a large herbaceous *Capparis* with bright golden flowers; and then rusty-looking *Acacia* bushes, and some odd-looking *Euphorbias*. The shores are bold and rocky, yielding rock-oysters, but destitute of *Algæ*.

On Sunday morning we started very early for the cantonment or town, four miles off. The Governor-General, Courtenay, Capt. Haines, and myself, were all the party. Our conveyance was a pretty French barouche with four horses: our road, an excellent one, wound along the beach opposite the Arab shore. At the neck of the peninsula is a steep hill leading to the "Gorge," which connects the valley of Aden with the rest of the peninsula; and here we left the carriage for Arab horses, all except the Governor, who had a Palanquin, while the carriage was dragged up after us through the fortified pass. At this place we ascended a hill to survey the fortifications, and obtain a view of the disputed points and modes of attack and defence. The scene was very grand, overlooking the flat sandy isthmus, with its Turkish and Arab forts and walls, similar to that neck connecting Gibraltar with the mainland of Spain. Below lay a village close to the neck, on a salt plain studded with houses belonging to the Hindoos employed in the fortifications, who spotted the plain with their white dresses. Around were all sorts of forts, guns, and black sepoy soldiers; behind, the towering mural crags of the peninsula full of holes whitened from the number of Vultures which are seen wheeling across the cliffs. Looking north, the eye detects the long sandy waste of the isthmus, with the sea on either hand, succeeded by a belt of green woods along the Arab coast; and in the distance a long yellow desert, backed by ranges of high mountains said to abound in fertile valleys blooming with the Rose of Shiraz, the Apple, Vine, and Apricot, Melon, and all the delicious flowers and fruits of Persia and Araby the blest. What a contrast to our present site! And it is from these distant hills that Aden is constantly supplied with vegetables, brought for sale by the Arabs. To the right of this position is the great black gulph in which Aden is built, a sort of valley of Acheron, unblest by water or any verdure, sprinkled with the white hovels of the natives, and, scarcely better, the long cantonments of the troops. On both sides are valleys, long steep naked gorges which run up the flanks of the mountains, mysterious-looking rents, leading to a distant black flat, which on this side of the island extends along the base of the highest ridge. This highest ridge is, as well as the spurs it gives off, in every point of view, remarkable, being always a serrated wall or knife-edge of rock, apparently inaccessible, but crowned here and there with the ruins of Turkish castles. To one of them an excellent Turkish road from the flat still exists, by which I afterwards ascended to a signal station. On various parts of the slopes above the town are tanks, cut under the cliffs, or built of fine stone wonderfully cemented, and there still exist the remains of an aqueduct, leading from the peninsula across the long neck of land to the Arabian shore.

At the town we went to Capt. Haines' official house, where he is endeavouring to wheedle garden plants into growth, and has succeeded with some short-lived annuals, which only want a winter; but the rest of those, whose duration is longer, perish with the following dry season. The heat of this valley is always 10° above that of the "Point," and the residents are all but roasted alive. At the Residency (Capt. Haines') we were met by the Assistant Polit. Agent, Lieut. Cruttenden, I.N., and the Civil Surgeon, Dr. Vaughan, successor to Dr. Malcolmson, whose absence I much regretted. In Cruttenden I recognized a contributor to the Transactions of the Royal Geological Society. He is a very agreeable and intelligent officer, and an experienced traveller in Nubia, Abyssinia, East Africa, and Arabia.

After breakfast we went to the chapel, a good wattle barn, built by subscription, and having Punkahs over the seats. The chaplain, an excellent man, startled me by the announcement of the following Saturday being Christmas-day; for I had latterly kept no account of the weeks and months, and there was little to remind one of it in the atmosphere. In the evening, while the Governor-General took some needful repose, I went to the top of the ridge or highest part of the island, "Shumsun," as it is called, 1700 feet of elevation. I had two "Soumalis" to carry my things, a large umbrella, broad white hat, with a round pillow on the crown, and a bolster round the rim outside, which keep the sun's rays from striking through the hat to one's head. We scrambled up one of the gullies over stony barren hills that led to the flat. The latter is about 800 feet up, a black waste of volcanic cinders, utterly destitute of vegetation or life, and so heated that the atmosphere for some feet above it flickered like smoke. Though now mid-winter it was dreadfully hot, the soil below the surface being 107° at 2, P.M., which must be far below the summer heat. A few valleys occur here and there, and these are sprinkled with vegetation, some shrubby milky *Euphorbiaceæ* and *Asclepiadeæ*, several gummy *Acacias*, the *Reseda*, four or five *Capparideæ*, shrubby and herbaceous, one or two wiry grasses, and a very common plant belonging probably to *Pedalineæ*. About the plains the ridge of rocks runs like a wall, some four miles long, curiously jagged at the top, which towered 1,000 feet above my head, and appeared inaccessible, except in one place, where a steep slope led to a cleft in the ridge, and up whose steep face a zigzag road was formed: to this I directed my course. At the foot of the rocks I found a few more plants in the beds of the dry water-courses; but none were in flower. All were Arabian-looking, *Antichorus, Tephrosia, Polygala, Amaranthaceæ, Acacias, Rutaceæ,* and *Capparideæ* always prevailing, with a frutescent *Lycium.* The shrubs were in woeful and dead-like plight, having very stout distorted spiny stems, short, woody branches, few leaves, and no flowers. A leafless, pale yellow-white, dichotomous *Euphorbia* was perhaps the most common.

The road to the top of the ridge was remarkable, where perfect, but much of it is broken away: the workmanship is so good that no one suspects the Turks of having constructed it, but people assert that it was formed, as well as the crowning forts, by captive Jews, under Solyman the Magnificent. The stones are of excessively hard vitreous basalt, more or less squared, placed side by side without cement or mortar, and so well fitted that in some places the causeway seems to ride, like a saddle, on the knife-edge ridge. At other parts the sides of the cliffs are hewn away, and I was constantly startled by the road apparently terminating abruptly over a tremendous precipice; but it was really carried up at an acute angle behind me. Towards the top I met with two specimens of a plant which I recognised to be the same as a shrub shown to me by Dr. Lindley some two years ago, at the gardens of the Hort. Society. It has a curious stem eight or ten feet high, expanding like a trumpet at the base, a few short branches and rounded lobed leaves. I saw no young plants, nor fruit, nor flower, and could only reach a twig from the road. The Hort. Society plants were, if I remember rightly, covered with *Dufourea flammea,* and were probably from another part of the island. At this elevation, 1,500 feet, I met with Lichens, on the rocks, crustaceous species, and on *Acacia* stems, *Roccella* and *Ramalina*; but no other *Cryptogamia.* The road met the ridge at a curious cut, as it were, in the wall; and on reaching the latter, a general view opened out of the west side of the peninsula, the bay, and steamers at anchor off the "Point," where Capt. Haines' house is situated. Our own vessel, with her lofty masts, was lying quietly at anchor; but the poor "Precursor" was kicking up the water, splashing, struggling, and backing off a bank on which she had grounded when getting under weigh six hours before, as I afterwards heard.

A similar causeway to that by which I ascended was carried along the ridges, but much of it has fallen away from time to time, on each side of the mountain; and a little pathway only leads to the summit, up which is a broad flight of steps, formed of cut stones laid side by side. At the top there is a signal station, and a soldier on duty, who, besides signalizing the shipping, takes meteorological observations. The lone creature lives in a hut built in an excavation of the summit, which is hardly broad enough for ten persons to stand upon, and he never sees any one but a "Soumali" servant or an Arab, who daily brings him water. I was very thirsty, but he had nothing but tepid water to offer me. This rocky crest is, of course, very barren of everything but Lichens, of which there is a fair sprinkling; but I had no time to stay to collect them. My descent was less fatiguing; though the causeway is formed of such slippery stones that it tired me as much as the ascent. Exclusive of the few plants, some forty species, there is little to be gained by the hot and dusty ascent of "Shumsun," always excepting the remarkable views, and the curious works of the Turks.

On the Monday morning I went out at day-break to gather what plants I could find in the cooler valleys facing the west: they were more luxuriant than on the eastern side, the soil being more gravelly; but still sterility was the order of the day. I added about twenty kinds to my former collection, but nothing remarkable on a casual inspection, or attractive at this flowerless season. Along the beach I did not procure a single maritime plant, nor an *Alga*: a dichotomous-leaved *Poa*, and a *Cyperus*, both growing in scattered tufts, occupying all the sand, whilst the rocks were invariably naked. Further back, the *Cleome* was abundant, with several smaller *Capparideæ*, the universal *Reseda*, some herbaceous and shrubby *Euphorbiaceæ* and *Leguminosæ*. A small weeping tree, ten feet high, possibly *Osyris*, was the largest plant. Several

Zygophylleæ, Fagoniæ, and some *Rubiaceæ* were plentiful; a filiform *Mathiola* (?) and a suffrutescent *Campylanthus,* a pretty Acanthaceous plant, two *Labiatæ,* one *Boraginea,* and some *Scrophularineæ* were also common. A fine fox crossed my path; but I saw none of the apes which are said to be common on the rocks, and thus to strengthen the resemblance between this peninsula and that of Gibraltar. Before 9 o'clock, A.M., the heat became considerable, and I was glad to get back to Capt. Haines', with barely time enough for breakfast, and to get my collections put into paper before going on board and starting for Ceylon, where we arrived on the last day of the year, and where I found Gardner, who had been waiting our arrival at Colombo for three weeks, and then started for Point de Galle, where we were in company with His Excellency the Governor of Ceylon. He was looking well, and extremely happy, and is evidently in high favour with the authorities.

"Moozuffer," Madras Roads, Jan. 5, 1848.

Here we are at last off the shores of India, for I considered myself so at Ceylon, where we landed the other day. My last letter was from Aden, since when we have been on the Indian Ocean, the most uninteresting sea I ever crossed in my wanderings, without birds, or any fish but flying-fish, to relieve the monotony of the cruize. We sighted Cape Comorin last Thursday, and on Friday forenoon landed at Point de Galle, Ceylon, a few hours after the "Precursor," and with the same object in view, namely, to lay in coal for the rest of the voyage. I dare say you thought of us on Christmas day, and so we all did of England and English friends. You, I hope, were more comfortably circumstanced; for in addition to other discomforts we had adverse winds and a rolling sea. The "Moozuffer" which was sent to Suez for us, is in one sense a splendid vessel, more like a yacht than a man-of-war, but neither fitted nor provided with any accommodation suited to the Governor-General of India. The Captain has only the table to supply, &c., and this he has done well. Anything more sumptuous in the way of fare on board ship I never met with; but there are neither cabins nor bedding for any of his

Lordship's suite; and even the Captain gives up his cabin to Lord and Lady Dalhousie. We lie on mattresses on the deck and 'tis all we can do to turn out tidy for meals in the cabin, for breakfast at 9 o'clock, tiffin at noon, dinner at 4, and then we spend the evening any way we can. The motion of her powerful engine is such that we cannot write without difficulty, and we have no private cabin to sit in.

I have not made many sketches, none indeed since I left Cairo, where I made several of and from the Pyramids. At Aden I was far too busy botanizing; though, alas! nearly all my collections have been since destroyed by the salt water getting into our wretched dormitory on board the "Moozuffer." Not only did my *Hortus Siccus* suffer, but my spare paper also; so that in Ceylon I was unable to preserve a single thing. This I the less regret, as I shall have to take Ceylon on my way to Borneo, when I intend spending a week or two with Mr. Gardner at Kandy.

At Point de Galle we lay in a pretty little cove, surrounded by dense forests and wooded hills, the beach fringed with groves of Cocoa-nut Palms, and backed by forests of tropical trees of the greatest beauty. A more charming spot I never was in, reminding me altogether of the scenes described in Paul and Virginia. The Cinghalese are a curious people, slender and dark-coloured; the men all wearing long hair, which they gather up and fasten in a knot, at the back of the head, supporting the knot, as ladies do in England, with a tortoise-shell comb, smearing the whole abundantly with Cocoa-nut oil. Their houses are huts thatched with Palm-leaves, buried in groves of Cocoa-nuts and Areca or Betel-nut Palms, each cottage being overshadowed by the ample foliage of the Bread-fruit tree, one of the most luxuriant-looking trees of the tropics, thick and umbrageous, with dark green glossy leaves, and at all seasons laden with its noble fruit. The Plantain and Banana, too, are abundant everywhere, and the Pine-Apple springs up by the road-side, bearing excellent fruit, very little inferior to that grown in our English stoves. Flowers there are of all kinds, from the gaudiest and gayest to the most humble and delicate: butterflies, beetles, and gay birds all abound, and all one longs for is the bracing air and far more wholesome, though less attractive, beauties of an English country scene. These are nice places to see, but not to dwell in, as the pale yellow, and all but sickly faces of the English children too plainly tell. Mosquitoes and sand-flies are rife, and so are detestable leeches, that get inside one's boot. Snakes, too, are said to be frequent, though I saw none of them.

The character of the natives is treacherous, and they are considered to be untrustworthy in their most trifling dealings, but they look happy, cheerful, and contented.

Our party was here divided into three. Lord and Lady Dalhousie went to a small Government residence (Government-House is at Kandy), Fane and Courtenay to the inn, whilst the Military Commandant, Major Cuthbert, kindly accommodated me for the night and day, or part of the two days we spent there. I had one long walk with Gardner (who had been waiting three weeks for my arrival) in the afternoon of Friday, another after daylight on Saturday morning (for Gardner and I sat up chatting all night), and a third after breakfast. It then came on to rain in true tropical style, as if it would beat the roofs in, accompanied by heavy thunder and lightning playing about us, as we sate taking tiffin in the open verandah, but neither Mrs. Cuthbert nor her little girls paid the very smallest attention to the storm, so habituated are all here to the strife of elements. I was very glad to have the opportunity of presenting Mr. Gardner to Lord Dalhousie before our departure. At 3 o'clock, P.M., we embarked under a heavy shower, which drenched the poor soldiers drawn out to salute us, and we started forthwith for Madras.

* * * * * *

We arrived in Madras roads last Wednesday, at 11 o'clock, P.M. There is neither bay nor harbour, only a wide expanse of anchoring ground, like Yarmouth roads, but wanting all protection to seaward in the shape of sands; so that a constant rolling sea renders landing very difficult. Soon after our arrival, the Governor, His Excellency the Marquis of Tweeddale (who as you know is the father of Lady Dalhousie) came on board, and invited us all to Government-House. He took Lady Dalhousie on shore with him, leaving Lord Dalhousie and us, his suite, till the afternoon; for it was necessary that we should land in state, and the troops could not be drawn up in the middle of the day. I was at first vexed by the loss of a day on shore, which, however, I did not afterwards regret, having had no idea what a fine thing an Oriental reception is.

Madras, as seen from the roads, is a long city on an extensive flat, without a rise of ten feet on any part, and the ranges of houses appear scattered and disjointed, from the number of trees planted amongst them. The amount of inhabitants is difficult to calculate, but there are not less than 5 or 600,000, a very large portion of whom had assembled to witness the landing of the Governor-General.

We had anchored at a distance of two miles from the shore, and at 4 o'clock in the afternoon, a very large boat came alongside, of the only kind fit for landing through the surf. These are about forty feet long, very high out of the water, flat-bottomed, wall-sided, and formed of planks of soft (Mango-tree) wood, sewed together with cord. They are pulled by about twenty black paddlers, who keep up a most discordant din by way of keeping time with the paddles, which are poles of some twenty feet in length, having a small round blade at the end. As we approached the shore, the whole beach, for miles, seemed alive with people, forming a moving mass of white turbans, black heads, white frocks, and black legs. Behind them the cavalry were drawn up, mingled with crowds of horsemen and carriages, and glittering with the bayonets of the troops. The nearer we approached, the more wonderful did this mass of human creatures appear; and we never ceased looking and wondering, till the motion of the boat told us we were in the surf of the beach. This was another and an equally curious spectacle. The steersman watched minutely every cresting wave, putting the boat round when any too big to be kept a head of us approached, and urging the paddlers, who screamed and yelled all the more discordantly as each surf tumbled beside the boat and carried her on the top of its foaming crest, letting her down bodily on the hard sand every time, with a crack that would break any ordinary vessel to pieces. Our boat, when fairly aground, was hauled a little way out of the rollers, opposite an alley in the crowd, where Lord Tweeddale and his staff stood ready to receive us. We landed one by one, in chairs carried by black fellows, who were so quick in their motions, that all four of us were out in half a minute. The guns in the battery immediately saluted, and the bands struck up "God save the Queen," while the English, who formed the greater part of the crowd nearest us, hurraed, greeted us with hats off and handkerchiefs, and the troops gave the military salute. We were introduced formally to Lord Tweeddale, who was gorgeous in his Governor's uniform, broad ribbons, stars, and orders, and especially in the attire and appearance of his body-guards, aides-de-camp, and staff. The aides stuck close to us; for the crowd drew round so fast that it was difficult to reach the carriages, of which there were four: one for Lord Dalhousie, and the second with Ladies Tweeddale and Dalhousie, who had come down to meet the Governor-General, the third for Fane and your humble servant, the fourth for Courtenay and Bell.

The start for the Government-House was very striking, for here we were kept clear of the crowd by the Governor's body-guard, a splendid troop of horse-soldiers, and all the cavalry regiments, the whole under arms, with the bands playing. We were no sooner in motion than a thousand carriages full of gaily dressed people started with us, together with horsemen and mounted ladies, and running natives, who escorted us the whole way to the Governor-General's house: ourselves being immediately surrounded by the staff-officers and aides-de-camp, splendidly dressed, and mounted on iron-grey Arab horses. The troops occupied a mile and a half on both sides, first the splendid Madras cavalry, then the European, and lastly the native infantry. As we passed each, the band played the National Anthem, and they kept up the salute till all the carriages had passed. It was a gorgeous and stunning sight, but marred in some degree by the clouds of red dust which were carried along the road, and by the immoderate heat of the weather.

Government-House consists of two noble buildings, situated in a large grass-park, studded with trees of Mango, Date, Cocoa-nut, Peepul, Tamarind, and above all *Thespesia populnea.* The building where we alighted is the dwelling-house, of two stories, with pillared front and broad arcades all round. At the door we were received by the native servants, wearing white robes and turbans, broad scarlet belts edged with gold, and each bearing a brass badge. The public rooms are upstairs, large and lofty, built of brick covered with chunam, a preparation of lime plaster, fine and smooth as the best marble, of which all the interior work appeared built. The broad stairs are beautifully carpeted, and the landing-place surrounded with marble-like pillars and gilt arm-chairs. The rooms themselves are quite cut up by the large punkahs, which cross the lofty apartments from one side to the other beneath the glass chandeliers. The floors, too, are covered with yellow Chinese mats, for coolness sake, which take off from the effect of the rich yellow silk furniture. I had not been long in the drawing-room before I was accosted by Major Garsten, aide-de-camp to Lord Tweeddale, and Resident at the court of the Nabob of Arcot, whose palace-towers he showed me from the windows of Government-House, and who reminded me of occupying the same lodgings with him in Abercrombie Place (Edinburgh). He seemed highly delighted to see me, put his rooms, barouche and pair, and riding-horse at my disposal, and was as kind and attentive as possible.

There was but a small dinner party: the guests consisted chiefly of military gentlemen, among whom was General Cubbon, Political Agent for all Mysore, almost the first appointment in India, keeping state and honour like a Prince for all comers to Bangalore. The surgeon had come down with him, from whom I obtained a great deal of information about the cultivation of cotton in his part of India, where the heat and dryness of the summer cause wine-glasses to snap off at the stem without being touched, and Teak-wood tables to split across the grain. He knew and spoke highly of Dr. Wight, as did many persons. My apartments were in Government-House, but detached; in fact, I had a house or Bungalow all to myself, with bed-room, sitting-room, and bath-room: all empty, hollow-like places with no windows, but the walls all round formed of Venetian blinds, mats for carpets, and the beds enclosed by mosquito curtains. Others of us had tents pitched close to the house, which were very pretty, and lined inside with chintz. Two of Lord Tweeddale's aides-de-camp live constantly in one of these tents, when at Madras; but the Governor very generally resides with his suite at a country-house called Ghindy, about seven miles off.

On Thursday morning we had to receive Admiral Inglefield of H.M.S. "Vernon," with Capt. Sir H. Blackwood of the "Fox," and several other naval officers from ships in the Madras roads. I was very anxious to see Sir. H. Blackwood, whose brother, also a captain in the R.N., I knew at Cambridge, and who is going in the "Fox" to survey the Teak forest of Moulmain, where he recommends Government to buy a large piece of land and to build a dock-yard which may supersede Bombay, the Teak of the Malabar coast being all destroyed by injudicious felling. Lord Dalhousie had intended staying only twenty-four hours at Madras, but was persuaded to hold a levée on Friday, so the rest of Thursday was spent in going on board the "Moozuffer" to fetch our clothes. In the evening I called on Mr. James Thomson, brother of Dr. R. D. Thomson of Glasgow, and a member of the mercantile house in which our late friend Gideon T. was a partner. From him I found that I could get Gideon's plant-collector up from Cape Comorin to Calcutta; and I expect to be able to retain him in my service at the rate of twenty or twenty-five rupees per month (2*l.* or 2*l.* 10*s.*). I had also to procure a Madras servant, if I possibly could; but I failed, after a great deal of trouble. The Madras servants, as is well known, will do more than a Bengalee, can speak a little English, and will stick to you longer, through all parts of the country: very essential qualities for a traveller. The one I first sent for was already engaged, the second wanted twenty rupees a month, which I cannot afford, because

I must have five servants (besides plant-collectors) at wages of from six to fourteen rupees a month, and the third, an old man, who was willing to come for ten, I did not like the look of, and thought I saw some flaws in his character; so, after a great deal of enquiry, I am obliged to wait till I get to Bengal. In the meantime my progress in the language is very slow.

In the town I saw a juggler carrying a hooded snake, the Cobra, a beautiful creature, but of rather a sickly yellow colour, which coiled round the man's neck, and suffered itself to be teased to frenzy. The juggler also swallowed an egg and brought it out by his ear, and performed other tricks, all common in India, but so familiar through early reading, that I cannot help mentioning them now that the reality is witnessed. At the dinner-party to day I had the pleasure to make acquaintance with Mr. and Mrs. Walter Elliott. Mr. E., son of a late Governor, is, I think, Colonial-Secretary, a very talented man, and fond both of antiquities and zoology. He asked me to breakfast with him the next morning, and gratified me with a sight of many curiosities and objects of antiquity.

In the afternoon of Friday we had to attend upon Lord Dalhousie during a levée, at which all the Madras people, civil and military, made their obeisance. It was held in a magnificent hall or banqueting-room, detached from Government-House, having a good deal the character of the noble Exchange-room in Glasgow.

I do not think I have any more about Madras worth relating to you. The little leisure I could spare was devoted to the Agro-Horticultural Society's Gardens, and to the inspection of Mr. Elliott's birds and animals.

Sir Laurence Peel's, Garden Reach,
Calcutta, Jan. 20th, 1848.

Here I am on the banks of the Hoogly at last, with our excellent friend Wallich's pet, the H.E.I.C. Botanic Garden, looking me full in the face from the side of the river opposite to where I now am.

J. D. H.

[The account of this garden and other matters relating to India, will occupy a second portion of these notes.—Ed.]

A continuation of Dr. Leichhardt's *Travels in New South Wales, with some remarks by* Robert Heward, Esq., F.L.S.

In the sixth volume of this work some observations were published on Dr. Leichhardt's expedition to Port Essington, and at the close of the paper an intimation was given of the route Dr. Leichhardt intended to pursue on a second journey. From unforeseen causes, which are detailed below, it will be found that Dr. Leichhardt was compelled to return at a short period after the commencement of his operations.

The expedition reached the Dawson river * without much difficulty, the stream was then running so strong as to compel them to take advantage of a large tree which had fallen across it, to convey their baggage over. At Expedition Range, the rains set in, and the ground soon became so boggy that the mules sank to their bellies, and but slow progress was made. All the water-courses and creeks between Expedition and Christmas Ranges became flooded and compelled them to make a long détour to head them.

Deception Creek and Comet Creek were swollen into immense rivers, and all the surrounding country was inundated. Dr. Leichhardt had feared that the Mackenzie would impede their progress, and on his arrival at that river, his fears were but too fully realized. There had been several cases of illness as they travelled through the scrub, but here the whole party were attacked by fever, which subsequently assumed the character of fever and ague. Dr. Leichhardt had an attack of it for nine days, and it left him very weak for a long while after. They had to wait for three weeks before the river was fordable, and after getting over, the party were so exhausted by illness that they were wholly unable to proceed, and had to remain for three weeks longer to recover their strength. From the idea that change of place and slight exertion would operate beneficially, Dr. Leichhardt resolved to move on with the strongest of the party, and accordingly proceeded with the stock towards Peak Range, which was only sixty miles from the junction of the Comet and Mackenzie rivers. After the first stage, however, their helplessness became so apparent, that Dr. Leichhardt returned to the last halting-ground, where the goats and sheep strayed away from the camp, no one being able to watch them, and they were at length compelled to leave them behind.

---

* See map in Lond. Journal of Botany, vol. vi. p. 342.

After a rest they again moved on for three days, and reached the Downs of the Upper Mackenzie and Peak Range. Here the loss of the horses compelled them to stop, and as they had no more sheep, they killed the first head of cattle. They anticipated that the change of diet, from fat mutton to dried beef, might operate favourably on their health, but in this they were disappointed, for as the rain set in while the meat was drying, it became tainted and unpalatable. After having stopped here for nearly a fortnight, they again advanced about ten miles farther. At this period their cattle strayed away and became dispersed in the scrub, and frightened probably by the natives, became so wild that they only succeeded in bringing back nine out of thirty-seven after a fortnight's absence from the camp. Here they killed another bullock and dried the meat, and endeavoured by using great vigilance to retain the others; but in spite of all their efforts they broke away every night, and in five days they lost them altogether. Dr. Leichhardt and the native after a week's anxious search came upon four, and brought them to camp, where he found all his companions ill with fever, and the mules and horses gone.

Dr. Leichhardt seeing that it was impossible to move forward under these unfortunate circumstances made preparations for his immediate return, and set about collecting the mules and horses, the mules had strayed which they had not done since leaving Charley's Creek. They recovered three horses and three mules, which increased their stock to ten horses and nine mules.

Leaving their tea, salt, shot, and other baggage behind, they started on their road home, and after travelling thirty days without any interruption, reached the camp of Messrs. Blyth and Chevel, on the Condamine, on the 21st July, and on the 28th the station of Mr. H. S. Russel, on Darling Downs, where Dr. Leichhardt proposed to leave his things till a new party was organized, which he hoped would be about the beginning of May, 1848.

Since the above was written, accounts have reached this country giving the details of another journey of Dr. Leichhardt's, which was undertaken with the view of examining the country to the westward of the Darling Downs, between Sir Thomas Mitchell's track and the country gone over by himself in his expedition to Port Essington.

He took his departure on the 9th of August last, accompanied by three Europeans and a native. They followed their dray-track to the head of Acacia Creek, which is a tributary of Dogwood Creek. On the 15th they travelled down Acacia Creek, about twelve miles W.N.W.; on the 18th they made Dogwood Creek at his old crossing-place, in latitude 26° 24′, and continued for about ten miles N.W. by W., following a small creek up to its head, and coming to water-courses belonging to another creek, which had been called Bottle-tree Creek,* on his first expedition. The country was scrubby, with a few patches of open forest; the latitude of the camp was 26° 20′. On the 17th they followed the water-course down to Bottle-tree Creek, which was well supplied with water, and crossing it, came on a fine rocky creek with running water, about two miles W.S.W. from the latter; the intervening country was a rotten, rusty Gum forest (*Eucalypti*), with occasional patches of Cypress Pine (*Callitris*) and forest Oak (*Casuarina torulosa*, Willd.); they at length came to a fine open flat or undulating Iron-bark forest (*Eucalypti*), which seemed to continue to the eastward, and encamped on a chain of fine water-holes about twelve miles W.S.W. from their last camp. On the 18th they travelled about twelve miles and a half S.W.; two miles and a half from the camp they came to a good-sized creek, with the water filtering through the sand and pebbles; in following it up between hills and ledges of rock, they came on a table-land with patches of scrubby underwood. To the S.W. there were other creeks and gullies, which compelled them to keep to the southward, to reach a more open country. Here the Bricklow (*Acacia* sp.) scrub re-appeared, which, with one exception, had not been seen since they quitted the left bank of Dogwood Creek. They then entered upon a Box (*Eucalyptus* sp.) flat, which widened as they followed down its dry water-courses, in a southerly, and even south-easterly direction, and when the Bricklow scrub, which skirted the flat, ceased and allowed them to travel to the S.W., they passed for four miles over most beautiful, well-grassed, and open Box ridges; this open country extended to the S.E. as far as the eye could reach. In latitude 26° 32′ they came to a fine creek, with very large ponds of permanent water, surrounded with reeds, and with Myal groves (*Acacia pendula*, A. Cunn.) along its banks. The open Box forest to this creek induced Dr. Leichhardt to believe that he could proceed on a westerly course; but after a few miles travelling they were checked by scrub, which pushed them to the south-east, until they came back to the creek they had left, which they followed down for a few miles in latitude 26° 39′. The country to the left was still open, but to the right, Bricklow scrub approached very nearly the banks of the creek. The water-holes, though well provided with water, were all boggy, and the creek turned to the south-east and east-south-east. In travelling to the westward they entered into a dense Bricklow scrub, which continued for nine miles, when the country again opened into fine Box ridges and undulations. A small creek was followed, well provided with water-holes, for about four miles to the westward, when it turned to the southward, and having crossed a ridge, they came to another creek of the same character, running north and south, on which they camped in latitude 26° 43′, having made about thirteen miles W.S.W. from their last camp. One mile and a half to the westward of this creek there was another small one, and four miles farther on, they crossed a large creek with high flood-marks, and with lofty Box ridges, particularly on its right bank. Dr. Leichhardt thinks that the open Box country of the four last-mentioned creeks extends in an easterly direction round the scrub they had crossed to the first creek, and then in a southerly direction to a large creek or river, which is formed by the combined Dogwood Creek and Bottle-tree Creek. Soon after having crossed the largest of those creeks, which had received the name of "Emu Creeks," in consequence of numerous tracks of Emus on the young grass, they entered into Bricklow scrub, which became so dense, that after five miles travelling they were glad to follow a very winding water-course to the S.E.; it enlarged into a chain of large and deep water-holes, which seemed to be the constant resort of numerous natives, who had constructed their bark gunyas (huts) at most of them. Having followed it down for seven miles they encamped in lat. 26° 48′. This creek continues for ten miles S.S.W. before it meets Dogwood Creek. The country is open, but the ground is rotten, and timbered with Cypress Pine, forest Oak, and Apple tree (*Angophora lanceolata*, Cav.), which is here anything but the indication of a good country; the scrub ceased about two miles and a half above the junction. They then turned to the westward and travelled three miles, and came to the deep channel of a large creek, with flood-marks above the banks; the latter were frequently formed by perpendicular rocks; the bed was sandy, and rather boggy, in consequence of the slight stream of water which was filtering through the sands. A small narrow-leaved Tea-tree (*Leptospermum* sp.) was growing along the water's edge. Cypress Pine and White Gum (*Eucalyptus* sp.) formed a tolerably open forest; they camped on the right bank of this creek, in lat. 26° 55′. Two of the party who had gone to shoot ducks, did not come up to the camp that night nor the next day, and fearing that some accident had happened, Dr. Leichhardt returned to search for them. The following morning the missing pair joined, and explained their absence, by having come on the fresh tracks of another party, which they followed until they observed the want of mules' tracks, which induced them to return to the place where they had encamped. They had seen a great number of natives, amongst whom they recognised a man and his gin (wife), by a white spot which the latter had on her neck. These two had visited the camp at Charley's Creek, when starting for Peak

---

* The Bottle-tree, from which this creek is named, is the *Brachychiton* of Dr. Lindley.

Range on Dr. Leichhardt's second expedition. At that time many natives from the Balonne passed Charley's Creek to go to the Bunya Bunya district.* They now travelled down the little creek to its junction with Dogwood Creek, and followed the latter for a mile and a half, where the large sandy creek joined it. Below this junction Dogwood Creek increases very much in size, and the high flood-marks on the Box trees that cover the flats indicate the large body of water which sweeps down its channel during the rainy season. They continued on a westerly course, and left the river, which turned to the southward; but Bricklow scrub and sandstone gullies compelled them to bear to the south a little, and they encamped on a small scrubby creek, about ten miles west by south from the junction of Sandy Creek. For the next eleven miles to the westward they travelled over a scrubby Myal country, with patches of open puffy Iron-bark (*Eucalyptus* sp.) forest and of Cypress Pine. At this stage a conspicuous hill was in sight to the southward. They then came to a river running from the northward, with high but irregular banks, lined with large Water-Gum (*Eucalyptus* sp.); its bed was sandy, containing pebbles of fossil-wood, broken pieces of agate, and variously-coloured flint and quartz; it was overgrown with Tea-tree, and was well provided with water-holes. Judging from its size, its course could not be less than 180 miles, and the presence of fossil-wood and agate induced them to believe that it came from a downs country. Dr. Leichhardt suspected that it was Robinson's Creek which he had formerly crossed in lat. 25° 30′, about ninety miles above their present crossing place. The country along its banks was closely timbered with Box and Box saplings. They here saw the tracks of five horses coming from the eastward, and apparently passing down the river. Fourteen miles to the west of this river, which was distinguished by the name of "Horse-track River," they came to a large creek trending to the S.E. The intervening country was generally scrubby, with occasional patches of open forest. Near some clusters of Cypress Pine, the deep burrows of a probably unknown animal were observed. The entrance was by a large hole, four or five feet deep, from the bottom of which the burrow passed horizontally under ground. It was about one foot and a half in diameter, and would indicate an animal of the size of the beaver. Its tracks resembled those of a child two or three years old, and its dung was like that of the kangaroo. The creek was lined with Water-gum and Tea-tree, and well provided with large reedy water-holes; it was called "the Yahoo River." At night, when they were sitting round the fire, they heard a loud shrill disagreeable call of a night bird; Woommai, the native, succeeded in shooting it, and it proved to be a beautiful little owl. Ten miles west of the "Yahoo," they crossed another large creek, with large reedy water-holes in its sandy bed. The intervening country is covered with Cypress Pine and *Dodonæa* scrub. When seen from the westward of the large creek, which was named "Frederick's Creek," it appeared in form of a low range; the approaches from the eastward of the creek were fine and open. They continued their course to the westward for ten miles over sandy ridges, covered with most wretched Cypress Pine scrub, and came to a large creek with reedy water-holes and sandy bed, which was called "Bunce's Creek;" its direction was from S.W. to N.E. The slopes towards the creek were openly timbered with Box; beyond it there was a long range extending from north to south, which they crossed in latitude 26° 59′. Scarcely two miles to the westward they came to sandstone ridges which were covered with scrub, composed of Cypress pine, *Dodonæa,* and Bricklow, and which extended fully ten miles to the westward. Here another species of *Acacia,* akin to the Bricklow, formed a scrub worse than any they had yet met; dead timber made the road extremely circuitous, and the progress slow, and as it was frequently overgrown with thick underwood, it became dangerous for the mules and horses to pass through it. Being tired of an apparently never-ceasing succession of these *Acacia* ridges, they followed a water-course W. 30° S. for about three or four miles, and found a good supply in a rocky water-hole. Shortly after having encamped, three natives walked boldly up to them, after having cooeed and having received a cooee in return. Dr. Leichhardt and Mr. Isaacs met them about fifty yards from the camp to ascertain, if possible, whether they were near the Colgoon, which they expected soon to see; however, they could not make themselves understood, but parted good friends, after having given the natives three brass buttons each; there was no doubt that they had seen white men before. In coming down the little creek they had seen a fine plain to the eastward, and when they left it and travelled to the westward, they passed over very fine open Box ridges. Six miles from the little creek, and about twenty miles west of Bunce's Creek, they came to a water-course with a deep but dry bed, though with some ponds full of water parallel to it. The country continued open for about three miles to the westward of it, but at that distance a very scrubby mountainous country commenced; this river was the Colgoon, but not finding Sir Thomas Mitchell's track, Dr. Leichhardt supposed he was out in his reckoning, and determined to push to the westward until he came to the track. After going for seven miles over the scrubby mountain, they came to a large creek which ran to the northward, and encamped on this creek in latitude 27°, and followed it for about four miles; it preserved its mountainous character, and they subsequently left it to continue to the westward. The next sixteen miles was over a succession of *Acacia* ridges and creeks, which turned all to the N.E. and E.N.E. to join the North Creek, among which were patches of very fine Box and Myal country. Shortly after they fell in with a water-course going S.S.W., which was followed for about ten miles before they came to water, and that only after having camped a night without it. From a fine rocky water-hole of this little creek they travelled about two miles to the westward, when they discovered Sir Thomas Mitchell's returning tracks, and Mr. Kennedy's three-cart tracks outward bound.* About five miles to the northward they came to camp 80, on a litttle creek with good water-holes, in lat. 26° 53′. They continued to follow the tracks of Mr. Kennedy to lat. 26° 35′ and passed his camp 79; examined the country along a small creek joining the river at that camp; returned on their tracks to the place where they had first met Sir Thomas Mitchell's tracks, and followed them down to lat. 27° 30′, passing his camp 81. Between these two camps, which are very nearly forty miles distant from each other, they had to camp without water, and Mr. Kennedy appeared to have shared the same fate, for they found that he had tried to obtain it by digging in the sandy bed of the creek. After having seen sixty miles of Sir Thomas Mitchell's track, and finding that the country did not agree with his description of Fitz Roy Downs, Dr. Leichhardt concluded that he was on the Maranoa, and that the little river they had crossed was really the Colgoon.

---

* They go there for the purpose of procuring the seeds of the Bunya Bunya (*Araucaria Bidwilli*, Hook.) for food.

---

* Lond. Journ. Bot. vol. vi. p. 372.

They now returned to the eastward, to make the Balonne, and trace that river up to the junction of Dogwood Creek and the Condamine of Allan Cunningham, and to ascertain where those various creeks and rivers they had previously crossed joined the main stream. After travelling for eighteen miles through a thick Bricklow scrub, with a few interruptions of open ground, they came to a chain of fine large ponds; and about three miles farther found the Balonne. All the hollows, flats, and gullies along the river had been covered with water, and the flood-marks were visible full five feet above the banks on the trees; its course was from N.E. by N. to S.W. by S. They soon after passed the junction of a deep creek or gully, and camped in latitude 27° 24′, in tolerably open country. About three miles to the northward they saw Sir Thomas Mitchell's tracks leaving the river, but they were generally very faint. In lat. 27° 18′ a large creek joined the Balonne and it was supposed to be the Colgoon. The country below the junction of this creek is open, and by far the best they had seen along the right bank of the river. Above the Colgoon it is generally closely wooded, with some open patches; from the junction of the Colgoon to the junction of Sandy Creek, the Balonne runs from E.N.E. to W.S.W., with wide bends to the southward; their second camp from the Balonne was in lat. 27° 17′. About twenty-four miles from the junction of the Colgoon, up the river, another large creek joins it; it comes from N. 35° E., and corresponds to Bunce's Creek and Frederick's Creek, which most probably join before meeting the Balonne. Six miles below, and two miles above this creek, they saw trees marked with an H. Sixteen miles beyond, a third large creek joins the Balonne, this was supposed to be the Yahoo; twelve miles above this they passed the junction of the Horsetrack River, and twenty-five to thirty miles higher, were again at the junction of Sandy Creek. Between these two rivers, about eight to ten miles below Sandy Creek, Mr. Bunce and Woommai had observed the junction of a large creek from the left side, and Dr. Leichhardt supposes that this is the Condamine, which has been followed down to its junction with Dogwood Creek. They followed Dogwood Creek up to lat. 26° 56′, crossed it, and travelled about eleven miles E. by N., when they came on one of its bends to the southward in lat. 26° 53′, in a fine open country. In continuing the course E. by N. they passed over some very fine country and came to the Condamine on a very remarkable bend, below which they found the letter B marked on a tree. Three miles higher up the river they camped in 26° 49′. Nine miles further to the east they came again to the river, which had made a large bend to the northward; they crossed it, continued about seven miles to the eastward, and approached the river a second time. They had just encamped, when Woommai heard the neighing of a horse; a gun was immediately fired, which was answered by the crack of a stock whip, and shortly afterwards Mr. Ewer came up to the party, and gave them the agreeable intelligence that they were near his station.

On Dr. Leichhardt's return to Sydney, Captain Perry kindly permitted him to inspect Sir T. Mitchell's map, of which he says:

"His Fitz Roy Downs commence about ten or fifteen miles above the place where I crossed the Colgoon. He could not have seen the river Balonne to the east of his Grafton Range, when he was standing on Mount Abundance; it was very probably Bunce's Creek. I am inclined to believe that similar patches of open country exist at the head of Bunce's Creek, Frederick's Creek, Yahoo River, Horse-track River, and perhaps even of Sandy Creek, but I do not think that they form an uninterrupted belt of downs above the scrubs of their lower course. I find he has crossed my track at Expedition Range, but further to the westward than I did; his Mudge-kye is the most distant of my Christmas Range, his Mantuan Downs are my Albini Downs; his Nogoa is my Comet River, though I did not go so far up as to see the junction of the Salvator and the Claude; and I am afraid that as his Belyando turns out to be the Cape, his Victoria will turn out to be the Clarke, the largest tributary of the Burdekin from the westward. A dray road will be found practicable in the dry season from Mitchell's track along the Balonne and the Condamine (which is one of its principal heads), to Darling Downs. Should stations be formed on the heads of these various creeks, the respective roads will have to follow down the creek, and join the main road along the Balonne, which will be rendered extremely circuitous and difficult by numerous gullies, back-waters, and deep creeks, which join that river. The stations will become very isolated in consequence of those broad belts of scrubby country intervening between the creeks. The natives appear to form powerful tribes along the Balonne and its numerous lagoons, and would be dangerous enemies along the scrubs, which would allow them a secure retreat from their aggressions. Considering the long and precarious land-carriage, and the high rate of wages, particularly in such remote stations, I do not believe that sheep-farming will pay, even as far as the Maranoa, which at camp 80 of Sir Thomas Mitchell would be very eligible for the purpose. But the road from that camp to Maitland will in all probability be found shorter than that to Moreton Bay. The distance from Brisbane to the junction of the Colgoon with the Balonne would be, according to my estimate, 232 miles; but the dray-road will prove to be at least 440 miles. It is to be expected that creeks, corresponding to those from the northward will join the Balonne from the south and southeast, taking their rise in the Mackintyre Ranges. Should the country at Peak Range be settled upon, Sir Thomas Mitchell's track will no doubt form the road on which stock will move up to the latitude of that locality."

Contributions to the Botany of SOUTH AMERICA; *by* JOHN MIERS, ESQ., F.R.S., F.L.S., &c.

(Continued from p. 64.)

DORYSTIGMA.

I am indebted to the kindness of Dr. Lindley for allowing me to examine and define several of the following Solanaceous plants, and I take this opportunity (April, 1848,) of repeating my obligations to Sir William Hooker for his liberal and kind permission to describe the many following new species which, during the last twelve months, I have found in his rich and extensive Herbarium.

In the *Jaborosa* group, and belonging to the genus above mentioned, whose elements were defined in the London Journal of Botany, vol. iv. p. 347, I have now to add a third species.

3. Dorystigma *crispa,* n. sp.; caulibus plurimis, cæspitosis; foliis subfasciculatis, glaberrimis, carnosulis, irregulariter pinnatifido-laciniatis, in petiolum longum alatum decurrentibus, laciniis latis brevibus, mucronato et sinuoso-dentatis, uninerviis, eveniis, sinubus crispato-undulatis, margine subrevolutis; floribus cum foliis in collum fasciculatis, bracteis parvis, subulatis; corolla extus imo glabra, superne pubescente, intus fauce lanuginosa, limbi laciniis oblongis, obtusis, staminibus fere exsertis. —Bolivia *v. s. in herb. Lindley.* (*Bridges,* 1846.)

This plant has very much the habit of the two species formerly described, the leaves much resembling those of D. *squarrosa,* (Illustr. So. Am. Plants, plate 6), being nine lines broad, the petiole is one inch and a quarter, the blade one inch and three quarters, altogether three inches long; the peduncles six lines, and the corolla six lines in length.

SALPICHROMA.

In order to harmonize better with the names of the two approximate genera, *Iochroma* and *Pæcilochroma,* I propose to substitute that of *Salpichroma* for *Salpichroa,* the genus described in the Lond. Journ. Bot. vol. iv. p. 321. The plants from Columbia and New Grenada, there alluded to in p. 325, I now find to belong to a new species, very distinct from Dr. Meyen's *Atropa hirsuta,* of which I have since seen an original specimen. The number of species, to which I have still to add another, will therefore stand as follows.

§. Eusalpichroma	1.	Salpichroma	*glandulosa,* loc. cit.
	2.	,,	*dependens,* ib.
	3.	,,	*hirsuta,* infra descrip.
	4.	,,	*ramosissima,* loc. cit.
	5.	,,	*diffusa,* n. sp. infra descr.
	6.	,,	*tristis,* n. sp. infra descr.
§. Perizoma	7.	,,	*rhomboidea,* loc. cit.
	8.	,,	*ciliata,* ib.

3. Salpichroma *hirsuta*. Atropa hirsuta, *Meyen*. (*Riese em die Erde,* vol. i. p. 466. *Nees ab Esenb. Nov. Act.* 19. *Suppl.* 1. p. 389): caule suffruticoso, ramosissimo, diffuso, ramulis molliter hirsutis; foliis alternis vel in turionibus fasciculatis, ovatis, basi obtusis, inæqualibus, apice acutiusculis, utrinque pilis articulatis sparse hirsutis, longissime petiolatis, petiolo complanato, tenuissimo, ciliato, limbo 3 vel 4-plo longiore; pedunculo capillari petiolo breviore; calyce hirsuto, profunde 5-partito, laciniis lineari-subulatis, erectis; corolla longe tubulosa, extus pilosula, tubo imo gracili, superne infundibuliformi, calyce 4-plo longiore et petiolo æquilongo, antheris styloque sub-exsertis; bacca ovalis, calyce persistente suffulta.—Peruvia, circa Pisacomam, altit. 15,000 ped. —*v. s. in herb. Hooker* (Atropa hirsuta, *Dr. Meyen*).

The specimen above referred to, being named by Dr. Meyen himself, leaves no doubt as to the identity of the species, so that in accordance with it, I have given the above amended diagnosis. Nees v. Esenbeck describes the plant as being much branched but the specimen here referred to, consists only of a small single branchlet, which is slender, with alternate distant leaves, the blade being about nine lines long, and six lines broad, the petiole almost filiform, measuring sixteen lines, and the peduncle eight lines, the calyx four lines, the tube of the corolla sixteen lines, with five reflexed, short, ovate segments of one line and a half; the berry is about seven lines long and four lines diameter.*

5. Salpichroma *diffusa,* (n. sp.): caule suffruticoso, ramosissimo, divaricato-flexuoso; foliis geminis, ovatis, basi obtusis, apice subacutis, utrinque pilis articulatis hirsutulis, margine floccoso, petiolo dilatato limbo breviore; floribus solitariis, breviter pedunculatis, calyce 5-partito, hirsuto, laciniis linearibus; corolla subbrevi, infundibuliformi, tubo nullo modo gracili, ore subcoarctato, calyce 2-plo, aut vix 3-plo longiore, extus pubescente, limbi laciniis oblongis, obtusiusculis, reflexis, margine ciliatis, genitalibus inclusis.—America occidentalis intertropica.—*v. s. in herb. Hook.* Nova Grenada (Bogota, *Goudot*), Quito (Lloa, *Jameson,* No. 301), (Pichincha, *Jameson,* No. 32), Andibus Peruvianis, (*Mc Lean.*)

The above named plants are those which I had referred, on the occasion before quoted, to the species last described, they will, however, be seen to be evidently different: their leaves measure nine lines in length, seven lines in breadth, the petiole being about four lines, the peduncle and calyx each three lines, the tube of the corolla six lines, and its border about two lines.†

6. Salpichroma *tristis,* (n. sp.): humilis, suffruticosa, ramis flexuosis, subdichotomis, nudis, striato-rugosis, ramulis tenuissimis, brevibus; foliis geminatis minoribus, obovatis, apice subacutis, basi obtusatis, in petiolum planum caniculatum decurrentibus, carnosulis, eveniis, utrinque glanduloso-pubescentibus; floribus solitariis, pedicellatis, nutantibus: calyce subglabro profunde 5-partito, laciniis lineari-subulatis, acutis; corolla tubulosa, tubo imo latiore glabro, staminibus styloque inclusis glabris. —Quito. *v. s. in herb. Hook.* (Andibus Peruvianis, *Mc Lean.*) (Andibus Quitensibus, *Jameson,* No. 125.)

Having seen other specimens of the above plant, I am now enabled to offer it as a very distinct species. It appears to be a very diminutive shrub, of stunted Alpine growth, with short tor-

---

* This species will be delineated in the Illustr. South Amer. Plants, plate 28, A.

† This plant will be figured in the Illustr. South Amer. Plants, plate 28, B.

tuose knotty branches, and only a few inches in height; it throws out a few leaf-bearing branchlets as slender as the petioles, from half an inch to an inch in length, each exhibiting about three pairs of geminate leaflets, giving them much the appearance of being a pinnated leaf: the leaflets are two lines and a quarter long, and one line and a half broad, upon a channelled, flattened petiole, one line and three quarters in length: the calyx is cleft nearly to the base, into five, equal, narrow, subulate segments, two lines long: the tube of the corolla is about five lines long, one line and a half in diameter, with five short triangular reflexed teeth: the stamens arise from the middle of the tube, and are not exserted: the ovarium is conico-ovate, seated upon a thick, fleshy ring: the style is somewhat curved at the apex, and thickened towards the stigma, which is hollow, with an obsoletely bilobed margin. Both the leaves and flowers become quite black in drying, a peculiarity noticed upon a former occasion in other species of this genus: the bark of the woody branches is greyish, finely shagreened with raised dots.*

LYCIOPLESIUM.

To this genus, proposed in the Lond. Journ. Bot. vol. iv. (Note) p. 220, I have now to add another species.

6. Lycioplesium *fasciculatum*, (n. sp.): spinosum, ramulis subflexuosis, fere rugosis; foliis alternis, vel in axillas fasciculatis, oblongo-spathulatis, glabris, carnosulis, nervis pinnatis immersis, basi in petiolum subbrevem spathulatis, apice obtusis; floribus in medio spinarum binis, vel ex apice cum foliis plurimis enatis, verticillato-fasciculatis, pedunculis calyceque subpubescentibus; corollæ tubo brevi, summo campanulato, extus pubescente, limbo profunde 5-partito, lobis expansis, margine albido-floccosis, staminibus styloque exsertis.—Bolivia (*Bridges Collect.* 1846.)

This shrub very much resembles in habit the five species formerly described; the spines are from six to nine lines long, the leaves (including a petiole of three lines) are one inch and a quarter long, and five lines wide, they are of a bright green colour, somewhat thick and fleshy, smooth on both sides, and above are quite polished; the peduncles are half an inch long, the calyx is two lines, the corolla, including the lobes of the border, is from six to eight lines in length.*

---

* For a figure of this species see Illustr. South Amer. Plants, plate 28, C.

DUNALIA.

In the Lond. Journ. Bot. vol. iv. p. 333, I offered an amended character of this genus, founded upon the observations made upon a new species there described (p. 334), and which was figured in the Illustr. South Amer. Plants, plate 2. Since then, in the fine herbarium of Sir William Hooker, which is enriched with the collections of almost every South American traveller, I have seen a specimen of the typical species, D. *Solanacea, H.B.K.* of which an excellent figure is given by Professor Kunth in the Nov. Gen. et Sp. tab. 194; but in this instance, the whole plant is not almost glabrous, as is there represented: on the contrary, the stem, the petiole, and the under side of the leaves, are covered with stellate tomentum, which is also seen in the nervures of their upper surface; the flowers, in like manner, are densely clothed with similar tomentum. I find, too, that the tube of the corolla is not so slender, nor is the border so deeply cleft as there shown, being more sinuated with shorter and more obtuse lobes, approaching more the form seen in D. *Lycioides,* (loc. cit.) The difference in habit of these two species is very remarkable, and from their external appearance, in one case, the peculiar pubescence, its large leaves, its spineless branches, its dense fascicle of flowers, offer so great a contrast to the general habit of the other, that no one would pronounce them to belong to the same genus. I have now to add three new species, two very spinose, from Bolivia, and one, almost spineless, from Mexico, the latter being remarkable for the greater size of its corolla. It might, indeed, be easily mistaken for a species of *Iochroma,* were it not for its appendiculate filaments and smaller calyx.

---

* This species, with sectional details, will be shown in the Illustr. South Amer. Plants, plate 29.

An examination of *Dunalia acnistoides* will show how very intimately *Dunalia* is allied to *Acnistus*. In the latter genus, the filaments are generally flattened below the middle, and gradually expanded towards the point of insertion, and if we conceive the dilated margins to become split, or torn away from the central portion, we should find an *Acnistus*, thus, at once, converted into a *Dunalia*: there appears to me, indeed, no other difference between this and the typical species, where the flowers are numerously aggregated, and *Acnistus*; in the other spinescent species, where the flowers are few or solitary, the dissimilitude in habit is very remarkable. On this account it will probably be desirable to divide *Dunalia* into two sections:—1st. CONFERTIFLORÆ, containing 1. D. *solanoides*; 2. D. *acnistoides*; and 2nd. PAUCIFLORÆ, containing 3. D. *lycioides*, 4. D. *brachyacantha*, 5. D. *senticosa*, and 6. D. *ramiflora*, enumerated below.

§. CONFERTIFLORÆ.

2. Dunalia *acnistoides*, (n. sp.): inermis, ramis striatis, glaberrimis; foliis alternis, (floriferis geminis vel ternis,) elliptico-oblongis, acutiusculis, imo in petiolum longum gracilem caniculatum attenuatis, utrinque glaberrimis, supra glanduloso-pruinosis, subtus pallide glaucis, rachi prominente nervisque pinnatis rubentibus: floribus in axillis superioribus plurimis (circiter 20), fasciculato-aggregatis, petiolo æquilongis, pedunculis filiformibus calyceque glabris, corollæ tubo glabro calyce 4-plo longiore, lobis brevibus, extus tomentosis; staminibus inclusis, infra medium insertis, appendicibus filamento glabro tertio brevioribus, imoque tubi pubescentibus; stylo glabro vix exserto.—Huanaco, Peruviæ. *v. s. in herb. meo* (Mathews, No. 849, "*Lycium spathulatum*" *dicta*).

This plant so exactly resembles an *Acnistus*, and possesses so little the appearance of a *Dunalia*, that I did not doubt the correctness of Mathews's decision when on a former occasion I referred it to *Acnistus spathulatus* (Lond. Journ. Bot. vol. iv. p. 341). Although much resembling in habit the *Lycium spathulatum* of the Flora Peruviana, the flowers are far more numerous, and considerably smaller than in that species. Its leaves are three inches long, and one and a quarter broad, on a slender caniculate petiole three quarters of an inch long; the peduncle is about six lines, the calyx one line in length, tubular, obsoletely five-toothed, the corolla is four lines long, slender at base, slightly infundibuliform above, with lobes somewhat expanded, tomentose outside, and on the margin, half a line long and broad, without any intermediate tooth in each sinus: the filaments are one line and a quarter, the appendices two-thirds of a line, and the anthers half a line long.

§. PAUCIFLORÆ.

4. Dunalia *brachyacantha*, (n. sp.): fruticosa, spinosa, glaberrima, ramis vix flexuosis, spinis nudis, brevibus; foliis in axillis fasciculatis, in turionibus alternis, oblongis, in petiolum elongatum tenuem spathulatis, obtusis, utrinque glabris, supra lucidis, subtus flavescenti-pallidis, pinnato-nervosis, marginibus subrevolutis; floribus sub-ternis, pedunculis 1-floris, gracilibus, calyce glabro, curte tubuloso, membranaceo, 5-nervio, breviter 5-dentato; corolla violacea, longe tubulosa, limbo angusto, breviter 5-lobo, marginibus floccosis, lobis triangularibus, apice callosis, dentibus rotundatis glabris in sinubus interjectis: staminibus inclusis. —Bolivia. *v. s. in herb. Lindley* (*Bridges Coll.*, 1846).

This species, although very distinct from D. *lycioides*, much resembles it in its spinescent and glabrous habit; it has straighter branches, much shorter spines, and larger leaves: its stem is smooth, angular, and is marked with many small verrucose spots: its spines are only four lines long, its leaves, exclusive of the petiole, are two inches and a half long, and one inch broad, the petiole measuring seven-eighths of an inch: the peduncle is nine lines long, the calyx being two lines in length, and one line and a half in diameter: the stamens arise from a contraction of the tube, a little above its base, and are adnate to it by their central nerve for the length of two lines, leaving the winged margins quite free; from this point they become altogether detached and trifid, the filament being capillary, and four or five lines long, the appendages, which form a continuance of the winged margins, being subulate, scarcely a line in length, and erect. The style is much longer than the stamens, equalling the length of the corolla, and is thickened towards the apex. The berry not yet ripe (as seen in the specimen quoted), is three lines in diameter, supported on the persistent membranaceous calyx. I regret that the seeds were not sufficiently matured to determine the form of the embryo.

5. Dunalia *senticosa*, (n. sp.): ramis spinosis, tortuosis, vix flexuosis, substriatis, rugosis: foliis parvis, oblongis, in petiolum brevem spathulatis, obtusis, glabris, carnosulis, utrinque pallide virescentibus: floribus solitariis, vel binis, uno præcociore; calyce brevi, 5-gono, mucronato-dentato; corolla violacea, longe tubulosa, limbo versus apicem pubescente, breviter sinuato, 5-lobo, lobis 3-angularibus, callosis, margine tomentosis, dentibus longis interjectis; staminibus inclusis, inæqualibus.—Bolivia. *v. s. in herb. Lindley.* (*Bridges, anno* 1846.)

The spines in this species are one inch in length, the leaves (including a short petiole of two lines) are one inch long, and three lines broad; the peduncle is thickened at the apex, and five lines long; the calyx is one line and a half in length, and diameter; the corolla is an inch long, and its tube two lines in diameter, the stamens are included, two of them being rather longer than the others, the lower half of the filaments adhering by a central nerve from the base to nearly half the length of the tube of the corolla, the two free-winged margins of which are also terminated by long subulate teeth, a little more than a line long, as in both the former species, and in D. *Lycioides*, the anthers are also basi-fixed, and of a purplish colour: those of the two longer stamens are within the mouth of the corolla, the others a little below: the style is included, and of the length of the stamens.

5. Dunalia *ramiflora*, (n. sp.): fruticosa, obsolete spinosa, ramis striatis, glaberrimis; foliis apice ramorum fasciculatis, aut ex axillis annotinis solitariis, vel geminis, oblongis, in petiolum elongatum caniculatum tenuem spathulatis, obtusiusculis, utrinque glabris, subtus pallidioribus, margine sub-revolutis, nervis flexuosis; floribus axillaribus, præsertim in annotinis solitariis, rarius binis;

pedunculis gracilibus, 1-floris; calyce brevi, campanulato, 5-nervio, dentibus 5, obtusis; corolla majuscula, virescente, tubo elongato, infundibuliformi, glabro, intus imo tomentoso, limbo brevissimo, campanulato, ciliato, 5-angulato, angulis acutis, dentibus brevibus obtusis glabris interjectis, staminibus inæqualibus, tubo multo brevioribus; stylo longe exserto.—Mexico. *v. s. in herb. Hook.* (*Galeotti*, No. 1145, *Vera Cruz, in uliginosis alt.* 500 *ped.*)

This very distinct species is enumerated among Galeotti's Mexican plants (Enum. Acad. Reg. Brux. tom. xii. Bull. No. 2.) under the name of "*Nicotiana plumbaginifolia*? Wild," and is said to be found also near Jalisco, in the Province of Guadalaxara, at an elevation of from 3,000 to 5,000 feet, and at Juquila, near the coast at Oaxaca, on the borders of the Pacific, at the same elevation. The specimen consists of a simple, erect, and nearly straight stem, with internodes of three quarters of an inch distant; these mostly exhibit large cicatrices of the fallen leaves of the previous year, and above these arise, generally, a pair of recent leaves, and a solitary pendent flower: at the termination of the branch, the axils become closer, the leaves and flowers more fasciculated: only a single rectangular spine is here seen, which is half an inch in length: the leaves are quite spathulate, one inch and three quarters long, in addition to the caniculate petiole of half an inch in length, into which they are gradually attenuated; they are six lines and a half wide at the broadest part near the summit, are quite glabrous, marked with about five pairs of nervures, which are remarkably flexuose: the peduncles are one inch and a quarter, to one inch and a half long, very slender, but thickening towards the apex, and quite glabrous; the calyx is small, campanular, two lines long, membranaceous, with five prominent nerves, and five short rounded teeth, marked on the edge with a marginal nerve; the corolla is one inch and a half long, contracted for about three lines at the base, and thence slightly infundibuliform, spreading into a short campanular mouth tomentose outside, with a pentangular ciliate border, the angles being acute, and exhibiting in the plicature of the sinus, a prominent, glabrous, rounded tooth; the filaments arising from the upper part of the contraction of the tube, are unequal, varying from six to nine lines in length, the lateral appendices are scarcely more than two lines long; the number of stamens I have found to be eight in one instance, and four only in another, with a sterile fifth, but these, no doubt, are the result of irregularity; the lower part of the filaments are very woolly for about three lines in length, above which they are slender, terete, and glabrous, the anthers are erect, the ovarium is small, and the style, almost capillary, thickening slightly towards the apex, is from two to six lines longer than the corolla.

IOCHROMA.

A very pretty Solanaceous shrub with long purple flowers, now well known in our gardens, was first noticed by Mr. Bentham, and was selected by that distinguished botanist as the type of a new genus, under the name of *Iochroma tubulosa*: with this, he at the same time, associated two other species, and I subsequently added another, evidently congeneric with these two plants last-mentioned, (I. *macrocalyx*, Hook. *Lond. Journ. Bot.* vol. iv. p. 309,) and an excellent figure of this was at the same time kindly contributed by Sir William Hooker. At the period when I described the plant last alluded to, I had not seen the *Iochroma tubulosa*, Benth., or I should then have hardly ventured to propose the genus *Chænesthes*, for the plants there described under that name. By the kindness of Dr. Lindley, I was furnished, last year, with a living specimen of *Iochroma tubulosa*, in flower and in fruit, and am now therefore prepared to compare the relation of this typical species with other analogous plants. Subsequent observations upon this group have led me to the conclusion, that all the plants which I formerly associated under the name of *Chænesthes*, differ but little from the typical species last alluded to, being only distinguished by an occasional splitting of the persistent calyx in fruit, and by their flowers being always scarlet or of a deep orange colour, instead of a dark purple: they have all, the same long, tubular corolla, spreading very little in the mouth into a very short campanular border, which is almost entire, and furnished with five very short teeth: the stamens and pistillum are all alike in structure, and I perceive no difference in the fruit or seed. *Chænesthes,* therefore, as a genus, must verge into that of *Iochroma,* a name that ill accords with a scarlet corolla, but one that must remain on the score of priority. I suggest, however, the propriety of dividing the genus into two sections, one *Iochroma* proper, with a purple or greenish corolla, the other *Chænesthes,* with red and orange flowers. To both these sections I will here add several new species, proposing, hereafter, to illustrate by appropriate figures, the structure of each section respectively. The three plants first alluded to, I propose to separate from *Iochroma,* under the name of *Cleochroma,* for the reasons stated under that head (p. 348.) Dr. Walpers (*Repert.* vol vi. p. 629) refers *Iochroma* to the tribe *Cestrineæ,* and in a note (*ibid,* 620) says it hardly differs, as a genus, from *Cestrum.* This statement I cannot in any degree confirm; on the contrary, after a careful analysis, on which the following generic character is founded, it will be seen that *Iochroma* most unquestionably belongs to the tribe *Solaneæ.*

IOCHROMA, Bth. (Bot. Reg. vol. xxx. tab. 20.) *Calyx* ovato-tubulosus, subinflatus, submembranaceus, 5-dentatus, dentibus inæqualibus, interdum fere obsoletis, demum parum auctus, persistens, et in fructus grossificatione sæpe lateraliter hinc fissus. *Corolla* tubulosa, calyce 4–6-plo longior, medio subincurva et subdilatata, limbo brevissimo, vix expanso, æstivatione plicato, margine pene integro, floccoso, dentibus 5, minimis, rotundatis, et alteris 5 quasi obsoletis in sinubus intermediis notata. *Stamina* 5, subinclusa; *filamenta* teretia, paulo supra basin tubi inserta, imo crassiuscula, tomentosa, superne gracilia, glabra; *antheræ* oblongæ, 2-loculares, imo paulo discretæ, in sinu basifixæ, loculis parallelis coadunatis rima externa longitudinaliter dehiscentibus. *Ovarium* obovatum, imo disco annulari fere obsoleto cinctum, 2-loculare, ovulis plurimis, dissepimento incrassato, utrinque affixis. *Stylus* filiformis, apice paulo incrassatus, sæpissime exsertus. *Stigma* clavato-capitatum, emarginato-2-lobum. *Bacca* calyce membranaceo vesiciforme, interdum hinc fisso, inclusa, 2-locularis. *Semina* numerosa,

compressa, reniformi-rhomboidea, in pulpam tenuem nidulantia, testa scrobiculata. *Embryo* intra albumen carnosum fere annularis, filiformis, cotyledonibus semiteretibus, radicula paulo curvata, infera, ab hilo laterali declinante, æquilongis.

Suffrutices Americæ intertropicæ *indigenæ*; folia *alterna, petiolata, elliptica, integra*: flores *rarius axillares, bini, vel sæpissime è ramulo novello cymulam umbelliformam, primum terminalem, mox lateralem simulantes*; pedicelli *uniflori, elongati*; corollæ *longæ, speciosæ*.

§ I. IOCHROMA VERA: corolla dense purpurea.

1. Iochroma *tubulosa*, Bth. *Bot. Reg.* vol. xxxi. tab. 20. Habrothamnus cyanæus, *Lindl. Bot. Reg.* vol. xxx. *Misc.* p. 72: ramulis junioribus incano-pulverulentis: foliis ellipticis, utrinque acuminatis, subacutis, imo in petiolum decurrentibus, pulverulentis, superne demum parce pubescentibus, cymula 6–8-flore, calyce inflato, corolla profunde purpurea.—Loxa, in Andibus Ecuadorensibus. (Hartweg). *v. v. cult. et sic. in herb. Hooker.* (Loxa, *Seemann*, n. 883.)

This is described as a shrub, from four to six feet high. The leaves are three inches and a half long, one inch and three quarters broad, upon a petiole one inch in length. From six to eight flowers spring out of the apex of the branch, which subsequently increasing, leaves the fascicle finally axillary; the peduncle is ten to fourteen lines long, the calyx is four lines long, and the corolla, of a deep rich purple colour, is one inch and a quarter long, and two lines and a half in diameter, somewhat narrow in the mouth and base, the border very short, somewhat cup-shaped, being only four lines in diameter, when fully expanded: its margin is almost entire, tomentose, with five extremely short, almost obsolete, rounded teeth. The berry is oval, five lines long, three lines in diameter, enclosed in the scarcely enlarged ventricose, membranaceous calyx, and contains a number of small, flattened, rhomboidal seeds.

2. Iochroma *longipes*, (n. sp.): ramulis glabris; foliis ellipticis, utrinque acuminatis, longe petiolatis, undique glaberrimis, subtus

pallidioribus, margine subrevolutis; floribus speciosis, fasciculatis, longissime pedunculatis, glabris, pedunculo apice incrassato, corollæ tubo elongato, limbo brevissimo, subcampanulato, margine tomentoso, dentibus 5 minimis rotundatis cum alteris in sinubus notato, genitalibus exsertis; bacca oblonga, calyce persistente lateraliter fisso cincta, et duplo longiore.—Ecuador. *v. s. in herb. Hook.* in Vallem Lloæ (*Jameson*).

This plant has very much the habit of the preceding species, but it is altogether devoid of any pubescence. Its leaves are four inches and a half long, one inch and three quarters broad, upon a petiole from one inch to one inch and a half long; the peduncles are two inches and a quarter to two inches and three quarters long, thickening towards the apex; the calyx is tubular, quite smooth, unequally five-toothed, four lines long, and two lines and a half in diameter; the corolla, apparently purple, is one inch and a half long, three lines in diameter in the middle, somewhat contracted below, and in the mouth, terminating in a short cup-shaped, almost entire border, as in the last species, with five distant, small, rounded teeth, and with another short intermediate tooth in each sinus. The berry, apparently not quite ripe, is eight lines long, three lines in diameter, invested by the persistent calyx three lines long.*

§ II. CHÆNESTHES: calyce in fructu lateraliter fisso: corolla coccinea vel aurantiaca.

The characters of the species before enumerated, are here revised upon more extended specimens.

3. Iochroma *fuchsioides.* Chænesthes fuchsioides, *Nob. Lond. Journ. Bot.* vol. iv. p. 337. Lycium fuchsioides. *H.B.K. Nov. Gen.* vol. iii. p. 52. *Plant. Æquin.* vol. i. p. 147. tab. 42. *Bot. Mag.* tab. 4149. Frutex sesquiorgyalis: foliis obovato-oblongis, in petiolum gracilem attenuatis, obtusiusculis, subfasciculatis, glaberrimis: floribus umbellato-fasciculatis, axillaribus, terminalibusque, pedicellis glabris, elongatis, cernuis; calyce subgloboso, margine brevissime inæqualiter 5-dentato; corolla tubulosa, coc-

---

* A figure of this species, with sectional details, will be shown in the Illustr. South Amer. Plants, plate 30.

cinea, glabra, intus imo pubescente, staminibus inclusis, filamentis gracilibus imo incrassatis et tomentosis; bacca rubra, ovata, calyce aucto lateraliter fisso inclusa.—Columbia. *v. s. in herb. Hook.* Quito, in Vallem Lloæ (*Hall*, No. 7.) Cuenca, Novæ Grenadæ (*Jameson*). Loxa, regni Ecuadorensis (*Seemann*, No. 882.) Columbia, (*Lobb.*)

To the details of this species (Lond. Journ. Bot. supra cit.) little more need be added. The corolla exhibits five short teeth with other intervening ones in the plicature of each sinus, as in I. *tubulosa*: the filaments are considerably thickened and densely tomentose at base: the berry is oblong, and very pointed, and is invested by the enlarged calyx, which splits on one side to the base. The form of the embryo is similar to that of the species just referred to.

4. Iochroma *umbrosa*. Chænesthes umbrosa, *Nob.* (*loc. cit.* p. 337). Lycium umbrosum, *H.B.K.* vol. iii. p. 54. Arbor biorgyalis, ramulis angulatis, hirto-pubescentibus; foliis oblongis, acuminatis, glabriusculis, floralibus ovato-rhomboideis; floribus umbellato-fasciculatis, pedicellis elongatis; calyce pilosulo, subcampanulato, dentibus 5, inæqualibus, obtusiusculis; corolla tubulosa, pilosa, coccinea? calyce 6-plo longiore, limbo brevi, subcampanulato, margine ciliato dentibus 5 et alteris in sinubus fere obsoletis, staminibus inclusis, filamentis filiformibus, glabris, imo incrassatis et tomentosis. — Columbia. *v. s. in herb. Hook.* (*Hartweg*, 1310.)

To the details before given (huj. op. vol. iv. p. 337), I have only to observe that the border of the corolla is very short, with teeth somewhat larger than in I. *tubulosa*; the filaments are inserted a little above the middle of the tube, thickened at base, and densely tomentose for one third of their length, more slender and glabrous above, and shorter than the corolla.

5. Iochroma *gesnerioides*. Chænesthes gesnerioides *Nob.* (*loc. cit.* p. 338.) Lycium gesnerioides, *H.B.K.* vol. iii. p. 53: ramulis cano-tomentosis, foliis ovatis, oblongisve, acutis, superne demum fere glabris, infra pulverulentis; floribus umbellato-fasciculatis; calyce 5-dentato; corolla tubulosa, aurantiaca, limbo subbrevi,

campanulato, sinuato-5-lobo, angulis acutis, filamentis imo tomentosis, antheris subexsertis.—Peruvia. *v. s. in herb. Hook.* (*Prov. Chachapogas, Mathews.*)

It may be observed in addition to what was formerly remarked upon this species, that the pentangular border of the corolla is more distinctly cleft than in any other species, and exhibits a tendency of form towards that of *Cleochroma*: the berry is equal in size to that of the species just mentioned, and is almost enclosed by a persistent calyx of very similar form, sometimes cleft irregularly.

6. Iochroma *Loxensis.* Chænesthes Loxensis, *Nob.* (*loc. cit.* p. 338.) Lycium Loxense, H.B.K. Loxa, regni Ecuadorensis.

7. Iochroma *cornifolia.* Chænesthes cornifolia, *Nob.* (*loc. cit.* p. 338.) Lycium cornifolium, H.B.K.—Quito.

8. Iochroma *lanceolata.* Chænesthes lanceolata, *Nob.* (*loc. cit.* p. 338.): fruticosa, ramulis subferrugineo-floccosis: foliis lanceolatis vel oblongis, valde acuminatis, supra parce pubescentibus, infra pallidioribus, floccoso-tomentosis, petiolo caniculato tomentoso; floribus plurimis, umbellato-fasciculatis, calyce tubuloso, subinflato, dentibus 5, inæqualibus, obtusiusculis. Corolla tubulosa, flavescente, calyce 4-plo longiore, limbo brevissimo 5-dentato. —Ecuador. *v. s. in herb. Hook.* Quindiu (*Goudot*) idem (Purdie) —Columbia (*Seemann*).

Respecting this species, in addition to my former remarks (*loc. cit.*), it may only be observed, that the corolla in shape and size, also resembles that of *Iochroma tubulosa,* and were it not for the colour of its flowers, which are said to be of a pale yellow, some of the specimens might almost be mistaken for that species. The berry, nearly altogether enclosed by the enlarged calyx, which splits on one side, also resembles that of the plant just mentioned. In some cases, the leaves are less lanceolate than in the specimen which I first saw and formerly referred to; they are sometimes much acuminated at each extremity, six inches long, and three inches broad, upon a petiole one inch in length.*

* A figure of this species will be given in the Illustr. South Amer. Plants, plate 31.

CLEOCHROMA.

The plant with long, dark, purple flowers which I described under the name of Iochroma *macrocalyx*, Hook. (*Lond. Journ. Bot.* vol. iv. p. 339), was referred to that genus, on account of its being evidently congeneric with the *Iochroma calycina*, Bth. Since then, as I have just mentioned p. 342, I have had an opportunity of examining the typical species *Iochroma tubulosa*, Bth., which I had not seen at the period referred to, and have indicated the reasons for associating *Chænesthes* with that genus; but at the same time it appears to me, that not only *I. macrocalyx*, but also *I. calycina*, Bth., and *I. grandiflora*, Bth., should be detached from it, and retained as a separate group, for which I propose the name of *Cleocroma*, from κλεος, *præstantia*, χρωμα, *color*, on account of their large, handsome, purple flowers. The differences between it and *Iochroma*, which I will now proceed to point out, appear sufficient to warrant its assuming the rank of a distinct genus, but should it be thought otherwise, it may take its station as a third section of *Iochroma*: the differences between them are certainly much greater than those which separate *Physalis* and *Saracha*. In *Cleochroma* the calyx is generally very large, much more so in proportion than in *Iochroma*, increasing even during the development of the flower, becoming sometimes nearly half the length of its long, tubular corolla, and swelling in the middle to a much larger diameter: it is in like manner persistent, and at length wholly encloses a berry of considerable size. The corolla is, in like manner, quite tubular, and also somewhat swollen in the middle, but the border is very considerably larger, more expanded, and deeply divided into five distinct segments, while in *Iochroma*, the border is very narrow, but little expanded, and almost entire. The contrast between the corolla of all the species of *Iochroma* and that of *Cleochroma grandiflora*, with its large azure-blue flowers, with the mouth broadly expanded into a campanular form, and deeply cleft into five acute lobes, is very remarkable. In *Iochroma* (including *Chænesthes*), the filaments of the stamens are always more or less terete, and thickened towards the base, this lower portion being always densely tomentose, while the upper half is glabrous: in *Cleochroma*, on the contrary, the filaments are very thin, dilated, and membranaceous, especially the lower moiety, which is quite glabrous, or only sometimes slightly pubescent on the margins: their insertion is near the base in *Iochroma*, while in *Cleochroma*, although adnate below, they become free only a little below the middle of the tube of the corolla, which is pubescent thence to the base, while the filaments remain more or less glabrous. Even in the dried specimen, the remains of the thin annular disc surrounding the base of the ovarium may be seen in *Iochroma*, but I have not been able to distinguish it in that of *Cleochroma*. In *Cleochroma* the berry is larger, the seeds being apparently imbedded in a greater quantity of pulp, the embryo is less curved, and the cotyledons much shorter in proportion, forming even less than one third of its whole length, while in *Iochroma*, they are equal in length to the radicle. In the seeds of *Iochroma* and *Chænesthes*, the hilum is seen laterally in the sinus of the margin, where it is scarcely distinguishable by any particular mark, but in *Cleochroma macrocalyx*, I have noticed, in every instance, that the hilum is distinctly perforated through the testa, which is of thinner texture than in the seeds of *Iochroma*.

Cleochroma, gen. nov.—*Calyx* tubulosus, medio ventricosus, ore subconstrictus, inæqualiter 5-dentatus, reticulatus, persistens, et sæpius augescens. *Corolla* tubulosa, tubo medio subdilatato, calyce 2-plo, rarius 6-plo longiore, limbo conspicuo, campanulato, 5-partito, lobis acutis, æstivatione plicata. Stamina 5, inclusa; *filamenta* dilatata, tenuia, glabra, corollæ tubo imo adnata, infra medium libera; *antheræ* oblongæ, 2-loculares, loculis parallelis, connectivo dorsali adnatis, basi paulo cordatis, in sinu affixis, longitudinaliter dehiscentibus. *Ovarium* obovatum, 2-loculare, ovulis plurimis in dissepimento incrassato utrinque affixis. *Stylus* filiformis, apice incrassatus. *Stigma* capitato-bilobum. *Bacca* magna, ovata, calyce inflata inclusa, 2-locularis. *Semina* numerosa, compressa, reniformi-rhomboidea, in pulpam copiosam nidulantia, testa scrobiculata, hilo in sinu laterali perforato. *Embryo* intra albumen carnosum fere semiannularis, filiformis, cotyledonibus semiteretibus, radicula incurvata, infera, ab hilo declinante, duplo, 3-plove brevioribus.—Suffrutices *Ecuadorenses,* folia *alterna petiolata,* flores *speciosi, purpurascentes, sub-umbellati,* pedicellis *elongatis, unifloris.*

1. Cleochroma *macrocalyx.* Iochroma macrocalyx, *Hook. Lond. Journ. Bot.* vol. iv. p. 339. tab. 13–14: foliis rhomboideo-ovatis, utrinque molliter pubescentibus, subtus pallidis: floribus umbellato-fasciculatis: calyce tubo magno, ventricoso, 5-dentato, dentibus inæqualibus, corolla magna, speciosa, tubo calyce 2–3-plo longiore, hirtella, violacea, staminibus inclusis, filamentis dilatatis, glabris, nervo longitudinali notatis, imo margine ciliatis.—Quito, in vallem Lloæ altit. 9,500 ped. *v. s. in herb. Hook.* (*Hall.*)

I have little to add to the details of this species given in the place above quoted, except that of the observations made by Col. Hall, that "the calyx and corolla are of a deep indigo blue."

2. Cleochroma *calycina.* Iochroma calycina, *Bth. Bot. Reg.* 1831. *sub Tab.* 20: ramulis angulatis, verrucosis, pallide floccoso-pulverulentis; foliis deflexis, oblongo-lanceolatis, minute ruguloso-punctatis, aspero et incano-pulverulentis, inferne flavidis et araneoso-pulverulentis, petiolo valido, caniculato, imo crassiore; floribus fasciculato-congestis, calyce magno, medio inflato, demum augescente, hinc fisso; corolla tubulosa, cyanea, floccoso-pubescente, limbo expanso, 5-partito, genitalibus inclusis, filamentis dilatatis, tenuibus, nervo centrali notatis, glabris, imo margine ciliatis.—Columbia. *v. s. in herb. Hook.* (Hartweg. *n.* 1312.)

This plant has a very peculiar appearance; the leaves are turned down by the deflexion of the petiole, and are remarkable for the numerous close, almost scabrid spots of pulverulent hairs, and for the yellowish glandular pruinose down, that covers the under surface: they are six inches long, and two inches and a quarter broad, on a petiole of three quarters of an inch: the pedicels are one inch long, swelling upwards, the calyx, at first small and cylindrical, afterwards swells and acquires, before the ripening of the fruit, a length of one inch and a half, and is dilated below to the diameter of half an inch, remaining contracted in the mouth, so that by the growth of the included berry, it becomes ruptured on one side towards the summit: the tube of the corolla is more slender than the former species, and is one inch and a half long.

3. Cleochroma *grandiflora*. Iochroma grandiflora, *Bth.* (*loc. cit.*): fruticosa, ramulis angulato-compressis, striatis, junioribus floccoso-tomentosis; foliis late ovatis, basi rotundatis, ad petiolum tenuem breviter et abrupte attenuatis, apice acuminatis, supra pulverulento- tomentosis, subtus pallidioribus et molliter pubescentibus, penninerviis, nervis divaricatis; floribus apice ramulorum fasciculatis, pendulis, pedunculis elongatis calyceque brevi demum amplicato molliter pubescentibus, corollæ infundibuliformis tubo longo, pubescente, fauce sub-campanulato, limbo 5-lobo, lobis amplis, triangularibus, staminibus imo ortis, fere inclusis, filamentis omnino glaberrimis.—In Andibus Peruvianis regno Ecuadorensi conterminis. *v. s. in herb. Lindley.* (Lobb. n. 316.) *in herb. Hook.* (Hartweg. 814.)

This plant is quite distinct from any of the other species; the leaves have ten or twelve pairs of nerves, diverging nearly at right angles with the mid-rib: they are three inches and a half long, two inches broad, with a caniculate petiole ten lines in length; the umbels, arising with a few leaves from the summit of the young branchlets, which are scarcely longer than an inch, are from six to eight flowered: the flowers are pendulous from a somewhat slender peduncle, twenty-two lines long; the calyx in its florescent state, is only four lines long, and three lines in diameter, but it increases considerably in size with the fruit: the tube of the corolla, which is cylindrical, is one inch to one inch and a half long, and one line and three quarters in diameter, spreads suddenly into a somewhat campanulate border, one inch to one inch and a half in diameter, and is divided into five, oblong, acute, somewhat expanded lobes; it is described as being of an "azure blue" colour.* The tube is quite glabrous, even at the base, where, in the other two species, it is somewhat pubescent.

---

* This plant, with sectional details, will be represented in the Illustr. South Amer. Plants, Plate 32.

HEBECLADUS.

To this genus, which I proposed on a former occasion (Lond. Journ. Bot. vol. iv. p. 321), I have to add the following new species.

9. Hebecladus *mollis*, (n. sp.): caule subherbaceo, flexuoso, dichotomo, hirtello, subangulari: foliis geminatis oblongis, basi obtusatis, apice acuminatis, irregulariter et grosse sinuato-serratis, utrinque molliter hirtellis, pilis articulatis, pedunculo axillari, vel e dichotomia orto, gracili, molliter piloso, 2-floro, folio subæquilongo, corolla glabra, lutea, genitalibus inclusis.—Nova Grenada—*v. s. in herb. Hook.* (Goudot, *Plages de Combayma.*)

This plant has very much the habit of H. *asperus*, but the leaves are deeply sinuate, almost lobed, and covered with long, soft, articulated hairs. The leaves are two inches long, one inch and a quarter broad, with a petiole half an inch in length; the peduncle measures one inch and a quarter, the pedicels half an inch, the calyx a quarter of an inch, the corolla three quarters of an inch, with a campanulate pentangular border.*

10. Hebecladus *granulosus*, (n. sp.): caule suffruticoso, flexuoso, dichotomo, angulato, fusco-tomentello: foliis solitariis, ovatis, attenuatis, supra furfurosis, vel glanduloso-asperulis, junioribus hirtellis, pilis articulatis, subtus pilosulis: pedunculis solitariis, e dichotomiis axillaribus, pilosis, petiolo æquilongis, 2-floris, floribus pedicellatis, calyce parvulo, molliter piloso, corolla lutea glabra, margine tomentello, genitalibus inclusis.—Nova Grenada. *v. s. in herb. Hook.* (Goudot, *locis frigidis inter Ibague et Cartago*).

This species approaches H. *lanceolatus*, but the leaves are smaller, and broader in proportion to their length; they are two inches long, one inch broad, on a petiole three-eighths of an inch in length: the peduncle is scarcely one line long, the pedicels, very tomentose, are four lines; the calyx two lines; the corolla almost glabrous, tubular below, campanular above, is five lines long, exclusive of its spreading border of five triangular segments with tomentose margins, two lines long.

11. Hebecladus *sinuosus*, (n. sp.): caule angulato, striato,

---

* A representation of this species, with details, will be seen in the Illustr. South Amer. Plants, Plate 33.

molliter piloso; foliis alternis, vel geminatis, altero subminori, oblongis, grosse sinuato-dentatis, lobis obtusiusculis, utrinque pilis articulatis molliter hirsutis, margine ciliatis, rachi nervisque prominulis, imo in petiolum elongatum anguste decurrentibus; pedunculo bifloro, petiolo 3-plo breviore, pedicellis æquilongis, calyceque dense pilosis, corolla fere glabra, sicco lutea, limbi lobis acutis, staminibus vix exsertis.—Peruvia, Prov. Chachapoyas. *v. s. in herb. meo* (Mathews).

This species corresponds much in habit with the figure of *H. biflorus* (*Atropa biflora*) of the Flora Peruviana, but it is altogether covered with soft articulated down, and the leaves are larger, more sinuosely lobed, and with a much longer petiole. The leaves are four inches and a quarter long, by two inches and a half wide, the petiole being one inch and a half long; the peduncle measures only four lines, the pedicels are of the same length, the calyx three lines, and the corolla, tubular below, five-nerved, smooth, with a five-lobed expanded border, altogether six lines long. It differs from *H. mollis*, in having much smaller leaves, less hirsute, with infinitely shorter inflorescence.

PŒCILOCHROMA.

I propose to distinguish under this name a very distinct group of Solanaceous plants, all natives of the Valleys of the Andes of intertropical America. The type is the *Saracha punctata* of the Flora Peruviana. They are distinguished from that genus in being frutescent shrubs or trees, not herbaceous plants, in their leaves being generally thick, fleshy, shining, and more or less destitute of pubescence, and their much larger corolla, not rotate, but decidedly campanulate, of much thicker consistence, often fleshy, and generally marked with beautiful spots, whence the derivation of its name, from *ποικιλος, variegatus, χρωμα, color*. It is distinguished from *Hebecladus* and *Iochroma*, by its much smaller, glabrous, fleshy leaves, by its campanulate corolla, with an expanded pentangular border, not tubular and five-lobed, as in those genera: from *Cleochroma* it differs in the form of its corolla, and in its calyx not becoming considerably enlarged with the fruit. From *Lycioplesium*, to which in many of its species it approaches greatly in habit, and in the peculiar appearance of its leaves, it differs by its being destitute of spines, by its larger, broader, and more campanulate corolla.

Pœcilochroma: gen. nov. — *Calyx* turbinatus, ore valde coarctatus et in dentibus 5 brevissimis approximatis desinens, tubo subcoriaceo, colorato, inæqualiter in fissuras 1–2–3 abrumpens, persistens et non augescens. *Corolla* speciosa, campanulata, imo in tubum brevem contracta, plus minusve crassiuscula, sæpissime ornatim maculata, limbo expanso, sinuato-5-lobo, æstivatione plicato. *Stamina* 5, imo corollæ inserta, inclusa: *filamenta* tenuia, erecta, colorata: *antheræ* oblongæ, 2-lobæ, lobis parallele adnatis, intus longitudinaliter dehiscentibus. *Ovarium* obovatum, 2-loculare. *Stylus* longitudine staminum, gracilis. *Stigma* clavato-bilobum. *Bacca* pisiformis, calyce suffulta, 2-locularis. Semina plurima, cætera ignota.

Frutices *Ecuadorenses et Peruviani glabri* : folia *integerrima oblonga vel spathulato-ovata, breviter petiolata, crassiuscula, venis immersis:* flores *axillares, solitarii, vel bini, interdum plurimi, pedunculis* 1-*floris elongatis, apice incrassatis, coloratis:* corolla *aurantiaca, pulcherrime maculata, vel rubicunda*: baccæ *pisiformes, rubræ.*

1. Pœcilochroma *punctata. Saracha punctata*, R. & P. (Fl. Peruv. vol. ii. p. 42. tab 178 *b*:) suffruticosa: ramulis teretibus, fusco-coloratis, glabris, junioribus pulverulentis: foliis solitariis, rarius geminis, ovato-oblongis, venosissimis, supra glabris, subtus pulverulentis: floribus ad summum ramorum fasciculatim aggregatis, nutantibus, pedunculis 6–7, elongatis, unifloris, apice incrassatis; calyce in dentibus rotundatis rumpente; corolla magna, late campanulata, limbo sinuato-5-angulato, extus pulverulenta, intus luteo-purpurascente, punctis purpureis maculata: genitalibus inclusis, glabris.—Ad Muna, Tambo, Portachuelo, et Obrajilla, in Andibus Peruvianis.

The above plant, referred by Ruiz and Pavon to *Saracha*, unquestionably differs from all other species of that genus, which are generally herbaceous, straggling plants, and very pubescent, with a smaller and very rotate corolla of much thinner texture. The leaves from the figure above quoted, are two inches and a quarter long, one inch and five-eighths broad, with a petiole about three lines in length; the peduncle is about one inch and a quarter long: the corolla is one inch in length, and one inch and a half broad across the margin.

2. Pœcilochroma *frondosa* (n. sp.): suffruticosa, ramulis subcompressis, angulato-striatis, angulis ex axillis decurrentibus, rugulosis, glabris, valde foliosis: foliis subfasciculatis, ellipticis, utrinque attenuatis, subtenuibus, supra glabris, subtus parce fulvo-tomentosis, penninerviis, rachi nervisque subtus rubescentibus, margine revolutis: floribus ex apice turiorum juniorum fasciculato-aggregatis, fasciculis foliosis, pedunculo uniflore, glabro, apice incrassato, longitudine floris nutantis; calycis colorati dentibus 5 brevibus rotundatis; corolla speciosa, campanulata, extus fulvo-pulverulenta.—Prov. Chachapoyas Peruviæ. *v. s. in herb. meo* (Mathews).

Although intermediate with the foregoing and following species, it is manifestly distinct from both. Its leaves are three inches and a quarter long by one inch and a quarter broad, with a petiole three quarters of an inch long. About six or eight flowers are closely aggregated on the very short, young branchlets, and are mixed with young leaves: the peduncles are nine lines long, and are much thickened at the apex: the calyx is short, tubular, smooth, and with the peduncle, is of a dark, red colour, its margin being membranaceous, and unequally split into five, short, rounded teeth. The corolla is one inch long, and nine or ten lines in diameter on the ciliate margin, which is sinuately five-angular, very slightly pulverulent, and nearly glabrous outside; almost smooth within the mouth, but pubescent in the lower and more contracted portion: the filaments are slightly pubescent, with long, spreading, articulate hairs, are somewhat unequal in length, scarcely more than half the length of the corolla, and are slightly dilated at base. The ovarium and style are glabrous, the latter being the length of the stamens: the stigma is clavately bilobed.

3. Pœcilochroma *guttata* (n. sp.): suffruticosa, ramulis anguloso-striatis, subverruculosis, omnino glabris: foliis solitariis, rarius geminis, obovatis, apice breviter et repente attenuatis, imo subcuneatis, crasso-coriaceis, utrinque (etiam junioribus) glaberrimis, et eveniis, supra lucido-viridibus; subtus luteo-pallidis, margine revolutis, breviter petiolatis: floribus 8–9 ad apicem ramorum fasciculato-aggregatis, nutantibus, pedunculis unifloris, apice incrassatis, flore paulo longioribus, calyce glabro, corolla speciosa, campanulata, limbo sinuato-5-angulato, extus pulverulento-tomentosa, intus subglabra, punctis purpureis maculata, et imo pubescente, ovario tomentoso.—Peruvia. *v. s. in herb. meo.* (Mathews, *No.* 1151. *sub nomine Saracha punctata,* R. & P.)

Judging from the details and figure in the Flora Peruviana, this plant is certainly specifically distinct from the first described species to which Mathews referred it. The spots in the corolla are not distinguishable in the dried state, and they are probably more or less common to all the species of this genus: its leaves are small, fleshy, with a total absence of all pubescence, and of any apparent venation, are more ovate, much smaller, with a comparatively longer petiole than in *P. punctata*; in fact, they more resemble those of the genus *Lycioplesium*: in the specimen I possess, they measure one inch and five-eighths in length, and seven-eighths of an inch in breadth, with a petiole one inch and a quarter long; they are thick, fleshy, polished above, below of a pale greenish colour, with a prominent reddish mid-rib, and about five pairs of spreading, slightly prominent nerves. The peduncles are nearly one inch long, and nodding, being much thickened towards the apex: the corolla is of the same length, and seven-eighths of an inch in diameter across the mouth; it is less campanulate below, and the lobes of its border more acute, with a rounder intervening sinus than in *P. punctatus*; the margin is ciliately tomentose, outside it is covered with short, yellowish tomentum, inside it is nearly smooth, except towards the base, where it is very pubescent; the calyx is quite glabrous, with roundish, unequal, and membranaceous lobes, five longitudinal nerves, one in the middle of each lobe, terminating in as many short tomentose mucronate teeth. The ovarium is obovate and tomentose; the style and stigma are quite glabrous, and together with the stamens, are about three-fourths the length of the corolla; the stigma is clavately bilobed.

4. Pœcilochroma *maculata* (n. sp.): fruticosa, ramulis junioribus floccoso-tomentosis, adultis glabris, cortice rimoso-verruculoso: foliis alternis, vel geminis, oblongis, basi cuneatis, breviter petiolatis, crassiusculis, margine revolutis, supra lucidis, nervis pinnatis impressis, tomentellis, subtus fulvo-tomentosis; floribus axillaribus, solitariis, vel geminis, aut ad apicem ramulorum novellorum fasciculatim-aggregatis: pedunculis elongatis, calyceque brevi 5-dentato glabris: corolla speciosa, imo breviter tubulosa, cito late campanulata, flava, maculata, utrinque pulverulento-pubescente, limbo sinuato, 5-angulato, genitalibus inclusis, glabris; bacca globosa, pisiformi, calyce persistente suffulta. — In Andibus Peruviæ. *v. s. in herb. Lindley*. (*Lobb. n.* 152 *et* 388.)

This is a very handsome species. The leaves are two inches long, one inch and an eighth broad, with a petiole four lines in length; the peduncle, which is considerably thickened at the apex, is one inch long, and drooping; the corolla is large and handsome, being one inch and a quarter in length, and the same in diameter across the border; it is described as being "yellow spotted." The berry is small, about the size of a pea, and supported on the persistent calyx, which does not increase in size.

5. Pœcilochroma *Lobbiana* (n. sp.): suffruticosa, ramis junioribus cupreo-floccosis, adultis nigrescentibus, ramulis divaricatis: foliis ellipticis, utrinque acutis, apice sæpe obtusis, margine revolutis, utrinque glaberrimis, supra nitidis, nervis pinnatis impressis, subtus pallide virescentibus, rachi prominente rubello, petiolo brevi, glabro, tenui, caniculato; floribus speciosis, axillaribus, binis, rarius ternis, pedunculo apice incrassato folii longitudine, calyceque brevi 5-dentato glabris: corolla imo coarctata, deinde campanulata, sicco aurantiaca, extus pubescente, intus glabra, et versus basin leviter pubescente, limbo sinuato, 5-angulato: genitalibus inclusis glabris.—In Andibus Peruviæ. *v. s. in herb. Lindley*. (*Lobb. n.* 389.)

This species, in the appearance of its leaves, has very much the habit of the genus *Lycioplesium*, but the flowers are much larger, and more showy. The leaves are one inch and a half long, ten lines broad, with a petiole three lines in length: the peduncle is one inch and a quarter long, drooping, slender at base, thickened at its summit; the calyx is two lines long, three lines broad, somewhat pentangular, and five-nerved, the teeth being short, and rounded, with a mucronate apex: the corolla is large and handsome, one inch and an eighth in length, and one inch and a quarter in diameter across the border: the stamens are glabrous, three quarters the length of the corolla, the style is somewhat longer, glabrous, slender, and the stigma clavately bilobed.

6. Pœcilochroma *Lindeniana* (nov. sp.): suffruticosa, ramis rugosis, striatis, glabris: foliis cuneato-oblongis, in petiolum brevem attenuatis, apice obtusis, sub-emarginatis, margine revolutis, utrinque glaberrimis, crassis, supra nitidis, nervis impressis eveniis, subtus luteo-pallescentibus, rachi nervisque prominentibus; floribus axillaribus solitariis nutantibus, pedunculo folio florifero longiore, apice incrassato, corolla speciosa, campanulata, aurantiaca, extus pulverulenta, margine floccoso 5-angulato: genitalibus vix inclusis.—Ecuador.—*v. s. in herb. Hooker*. (*Linden, n.* 489.)

It possesses a habit very similar to the species before described, its leaves are one inch and an eighth long, five-eighths of an inch wide, tapering, with a very short petiole two lines in length: the axils are approximate, scarcely more than nine lines apart. The peduncle is nine lines long, the dark-red fleshy calyx splitting irregularly into three unequal triangular mucronate lobes with membranaceous edges, is three-eighths of an inch long, the corolla is large, broadly campanulate, one inch and a quarter long, one inch diameter in the mouth, the somewhat expanded, pentangular border, measuring one inch and a half in diameter.

7. Pœcilochroma *Quitensis*. Lycium Quitense, *Hook. Icon.* 723: fruticosa, glabra: foliis ellipticis, obovatisve, obtusis, subcoriaceis, margine revolutis, breviter petiolatis, utrinque glaberrimis, supra lucidis, subtus flavo-pallescentibus; floribus axillaribus, binis,

nutantibus, pedunculo folio fere æquilongo, calyce imo coarctato, brevissime 5-dentato, cito irregulariter 2–3-fisso, corolla glabra, infundibuliformi-campanulata, limbo patente, sub-5-lobo: genitalibus corollæ æquilongis, glabris.—In Andibus Quitensibus—*v. s. in herb. Hooker.* (*Jameson, n.* 200.)

The drawing above quoted gives an excellent representation of this species. I observe, however, that when the corolla is fully grown, it is more campanulate, and the border is more pentangular than is there figured, where it is seen in its half plicated state before full expansion; in that state the plicatures of the sinus bear somewhat the appearance of intermediate teeth, but these in reality do not exist. The leaves are of a bright, shining green, one inch and three quarters long, three quarters of an inch broad, with a fleshy channelled petiole of two lines in length: above, the nervures are wholly immersed in the fleshy parenchyma; below, they are seen much spreading, and with the prominent midrib of a reddish colour. The peduncles, nearly as long as the leaves, are nodding, and are considerably thickened above: the calyx is fleshy, three lines long, with five short, obtuse, mucronate teeth, and its membranous margin is often split irregularly nearly to the base: the corolla appears of a dark orange or crimson hue, rather thick in its texture, smooth below, but slightly pubescent above outside: within the mouth it is smooth, but below it is pubescent: it is three quarters of an inch long, and measures three quarters of an inch across the mouth when fully expanded. The whole plant, especially in the shape and texture of the leaves, as well as in the appearance of the flowers, approaches very closely some species of the genus *Lycioplesium*; but it is not spinose, and the structure of the calyx and corolla determines its place.

(*To be continued.*)

BOTANICAL INFORMATION.

Notes and Observations on the Botany, Weather, &c., of the United States of America, made during a tour in that country, in 1846 *and* 1847. *By* Wm. Arnold Bromfield, M.D., F.L.S., &c.

(Continued from p. 213.*)*

The Jersey Pine barrens are but the northern extremity of that region so remarkable for its vast extent and general uniformity of aspect, as well as of geological and even botanical features, called the great Atlantic Plain, stretching from the mouth of the Hudson far down into Florida, having the great Appalachian chain for its western confines, and widening with the recession of those mountain ridges from the sea coast, to their termination in the rolling country intervening betwixt the Atlantic and the basin of the Missisippi, that forms the upper districts of Alabama and Georgia, in which are united the head waters of the Savannah and Alatamaha rivers, and those of the Alabama, Chattahoochee, and other noble streams that descend to the ocean and the Gulf of Mexico. This immense alluvial tract, the bed, doubtless, of the Atlantic in former ages, and which rises by a scarcely perceptible inclination from the shores of the ocean to its mountain barrier on the west, exhibits the extremes of sterility and productiveness, of unhealthiness and salubrity, in proportion to the distance from the seaboard by which these conditions are greatly affected; the increased dryness and elevation attained on approaching the "middle" and "upper country" from the lower maritime districts being the more favourable to health, as the fertility of the soil diminishes. Towards the foot of the mountains the now undulating surface is clothed with Oak and Hickory (hence called Hickory lands), and the strong rich soil yields abundant returns in Wheat, Indian Corn, Tobacco, and all the productions of the low country, except Cotton, for which the altitude of the upper districts is unsuitable.

Our route to Quaker Bridge lay through a level but agreeably diversified country. We passed some pretty villages before reaching the Pine district, which had all the main features of the same tracts in the southern States, a dead level of deep sand, over, or rather through which our vehicle wended its way noiselessly and without impediment, save from occasional contact with the stump of some tree or bush. As we advanced, the ground became more marshy, and the road, which in many places was very tolerable, ran for miles betwixt swamps, that were, in some parts, under water, from the abundant rain which had fallen a few weeks before. Sluggish streams, or "creeks," of the colour of tea or brandy, from vegetable impregnation, with rough bridges of planks thrown across them, intersected our road which was bounded in many places by drains or trenches prolific in aquatic plants. In the drier parts, the prevailing, and indeed predominant tree was the Scrub or Jersey Pine, *Pinus inops,* an ugly, nearly worthless species, with a stunted, impoverished aspect, like starved Scotch Firs, of no value as timber and not much esteemed for firewood. I find no mention in my notes of any other Pine having been seen, though such may have escaped my observation. When the Pines are cut down to clear the ground, or to be used, as they often are, for fuel in the glass and ironworks of the neighbourhood, they are invariably succeeded by a growth of oaks, chiefly of the following kinds; Black Oak (*Quercus tinctoria*), Swamp Chestnut Oak (*Q. Prinos*), Yellow Oak (*Q. Castanea*), Barren White, or Post Oak (*Q. obtusiloba*), Black Scrub, or Bear Oak (*Q. Banisteri*), and Black Jack, (*Q. nigra, Q. ferruginea,* Mx.) Of these, the last named species appears for the first time in New Jersey and the adjacent parts of Pennsylvania, in both which States its boundary, northwards, seems to be on the line of Lat. 40° as nearly as possible. Below this parallel it is common, and is greatly multiplied in all the southern States, preferring a dry, sandy, or stony soil, and though naturally only of moderate dimensions, attains a far greater height and bulk in those lower than these higher latitudes. Here the trees, though numerous, scarcely exceeded twenty feet, and were for the most part much under that height, with an irregular growth, and crooked trunks a few inches in diameter; but in the south I have met with specimens forty feet or more in elevation, with straight trunks of proportionable thickness to their stature, branching into fine, symmetrical cones of the richest verdure. The Black Jack, so called from the colour of its deeply rifted bark, which looks as if it had been charred by fire, is one of the most curious and not the least beautiful of the American Oaks, though valuable only as fuel, the wood being porous and not durable. The contrast between the dark, shining green of its huge pear-shaped leaves, and the delicate ferruginous tint of their downy undersides, recommends it strongly to the notice of the cultivator. It might possibly succeed with us as a shrub (a form it frequently assumes even in the south) on poor soils, or such as the Scotch Fir delights in, but could scarcely be expected to ripen its acorns, which are not generally abundant even in its native country. In the southern States I remarked the leaves to vary from the usual, rounded, and entire form, to acutely angular and even lobed, so as to have the air of a different species. The principal ribs of the dilated summit of the leaf are, in this last variety, prolonged into subulate points of considerable length, which at other times are very short or nearly obsolete. Amongst the Oaks above mentioned, the Barren White, or Post Oak (*Q. obtusiloba*) was frequent, but of very diminutive stature: this, in a more congenial soil and climate, is one of the most distinct, as well as magnificent and valuable of the American Oaks, coming next to the Live and White Oaks (*Q. virens* and *Q. alba*) in the strength and durability of its timber, and singularity of its foliage, which is deep green above, grey white underneath, very firm, and coriaceous.

In the moister and less barren spots, or in the deep swamps, and along the streams which intersect this singular region, I remarked the Tupelo, or Sour-gum (*Nyssa sylvatica*, N. multiflora, Walt,) White Birch (*Betula populifolia*), which has entirely the aspect of the common European species (*B. alba*), and is probably identical with it; Alder (*Alnus serrulata, A. incana*, Willd. var.?) never rising to more than a shrub from Canada to Louisiana; Holly (*Ilex opaca*), here and there only, and of very small growth; Dog-wood (*Cornus florida*), Red or Scarlet Maple (*Acer rubrum*), Swamp Laurel (*Magnolia glauca*), with a luxuriant undergrowth of *Kalmia latifolia*, and *K. angustifolia*, *Clethra alnifolia*, *Lyonia paniculata*, *Hudsonia ericoides*, Honey-suckle, *Azalea mediflora*, Sweet Fern, *Comptonia aspleniifolia*, Button Bush, *Cephalanthus occidentalis*, *Leiophyllum buxifolium*, *Aseyrum Crux Andreæ?* and *A. stans.*, *Gay-Lussacia* (*Vaccinium*), frondosa? now in full ripe fruit of a glaucous colour, and agreeable flavour; Candle-berry (*Myrica cerifera*), with many other ligneous plants of more general occurrence. Of the smaller and herbaceous plants were remarked *Xyris caroliniana*, *Iris versicolor* (out of flower), *Cyperus mariscoides*, *Eriocaulon decangulare* (extremely common), *Bartonia* (*Centaurella*) *paniculata*, Pin-weed (*Lechea minor*), *Sabbatia* ——? ; a *Carex*, of which I collected ripe seeds, *Orontium aquaticum*, *Pontederia cordata*, *Nymphæa odorata*, *Gratiola aurea*, *Hypericum angulosum*, *prolificum*, *Sarothra*, *mutilum* and *Canadense*. Of *Orchidaceæ* we picked *Habenaria flava*, and a *Spiranthes* (probably *S. cernua*) was seen growing remarkably tall and luxuriant out of the swamps, but wholly inaccessible from the heavy rains of the earlier summer, which much impeded our attempts at exploring these morasses. Two beautiful Polygalæ, *P. purpurea* and *P. lutea*, were collected, the latter with its lovely bright orange (not yellow) flowers in dense terminal heads, was abundant in many places, and is one of those southern species which, with certain others common to a lower latitude, range along the east coast far beyond their ordinary limits, being favoured by the moderating influence of the ocean on the climate, and the facility afforded to their migration northward, by the uniformity of soil, surface, and other physical conditions of the great Atlantic Plain.

I was surprised at the dearth of animated objects on this day's journey. Birds were very scarce, as I found them to be generally over the United States, at least as compared with the number of species and individuals in England. A few Blue-birds (*Motacilla sialis*), and Partridges (*Tetrao virginianus*), were almost the only kinds of the feathered tribes seen, and these but seldom.

Of Mammals, a grey Rabbit or two (*Lepus sylvaticus*, Bachm.) were alone visible at intervals. This animal so strongly resembles the English Rabbit as hardly to be distinguishable from it at a little distance; it runs in the same manner, but does not burrow like that, and though I believe it does not squat in form like our hare, its habits are as much those of the latter as of the former, the species appearing to connect the two, as was remarked long ago by the Swedish naturalist, Kalm, in his travels in North America. Some Toads, Frogs, and a few small Lizards (*Tropidolepis undulatus*) were seen occasionally, the latter chiefly on the Pines, the trunks of which they traversed in all directions with great agility. This species is not above six or eight inches in length; its colours, though grave, are harmoniously disposed and blended. The Saurians are an order of reptiles remarkably limited in the United States, the genera and species comprised in it being few as compared with those included under the remaining orders of Chelonians, Ophidians, Salamanders, and Batrachians. According to Dr. Holbrook, about fourteen species only of the Lizard tribe are at present known to inhabit the whole of the United States, and of these many are restricted in their range to the southern and western parts of that vast territory. Yet this very limited amount of species comprehends forms the most extreme in point of size, from the giant Alligator of ten or twelve feet, to the pigmy Anolis of scarcely as many inches in length. Nor are the individuals of this order so numerous as one might expect to find them in the hot, dry, and sandy Pine region of the Atlantic States, since I have never remarked them to swarm there as in Italy and the South of Europe generally. We came upon two huge Black Snakes (*Coluber constrictor*) near a creek by the road side; these I endeavoured to kill for examination, but they made a precipitate retreat, one taking to the water, the other to the bush, into which I pursued it, yet neither offered to stir till a blow had been aimed at each with a thick walking-cane. The former lay coiled up by the water's edge, the second closely twined around a shrub with its head erect, and the fore-part of the body outstretched, regarded me with the utmost composure at not a yard of distance betwixt us, and with a look, rather of curiosity than menace, quietly awaited the commencement of hostilities on my part, before condescending to betake himself to ignoble flight. The wonderful rapidity of the animal's movements may be judged of from the fact of his making no attempt to uncoil his voluminous folds till the uplifted weapon of his assailant was in the act of descending upon him for his destruction. I had supposed this reptile might be the same with the Black Snake of the West Indies, though the specimens now seen far exceeded in length and thickness the largest I had met with in Jamaica, where the species so called is by much the most frequent of the few Ophidians which inhabit that island; but my friend Dr. Holbrook, the eminent herpetologist, tells me he believes them to be quite distinct, there being, in his opinion, no reptiles common to the West Indies or South America, and any part of the United States. The two species certainly agree closely in everything but size; are equally bold, fearless, and active, and quite prepared to show fight when retreat is impossible, though I am not aware that the tropical Snake, like its more gigantic northern congener, ever takes the initiative so far as to become the aggressor on slight provocation, as the same gentleman assures me, from his own experience, is sometimes, though rarely, the case with the latter, which, in the coupling season, will occasionally descend from a tree to pursue and bite any intruder who should attempt to molest it. I have good grounds for believing that the bite of the North American Black Snake, though devoid of venom, is not likely to be less severe than that which the jaws of its more diminutive sable and southern relative are capable of inflicting, whose teeth (*expertus loquor*) have an aptitude for vengeful penetration, that unless the assailant join caution with courage in the onslaught, may, unexpectedly, convert the pæans of triumph into the wailing accents of discomfiture. Should any of my readers desire to make a Black Snake their prisoner, let them take warning from the misfortunes of a friend, and beware how they proceed by the ordinary process of arrest, to *collar* the caitiff with their bare hands. Escape from the pursuit of the Black Snake is said to be out of the question to any one not endowed with extraordinary bicrural provision for effecting an expeditious retreat in time of danger, the velocity of this reptile being such as to have acquired for it the name of "Racer" in several of the northern states, in many of which it abounds. Dr. Holbrook discredits the popular belief that this Snake throws down the person it overtakes by twining round his legs, and rejects, from his own observation, the assertion of its killing its prey by constriction; from one or both of which fallacious opinions the name of *constrictor* was given by Linnæus, probably on the relation of Kalm, whose account of the Black Snake, in his Travels, is very full and entertaining. The pair we fell in with seemed to be between five and six feet in length, and about the size of the fore-arm in their thickest part, or perhaps scarcely quite so stout.

At Basto we were hospitably received by — Richards, Esq., then about to establish a manufactory of glass at that place, which abounds in a sand little, if at all, inferior in whiteness to our Alum Bay sand, so much in request for the finest plate glass. I am told that Batsto signifies, in the language of the native Indians, a bathing place, which, if correct, would, with a little alteration in the spelling to Badstow, convey the same meaning in pure Anglo-Saxon. Pursuing the analogy farther, should such exist, might add much weight to the tradition that this part of America was colonized, or at least visited in the middle ages by adventurers from the north of Europe, amongst whom we may reasonably suppose the Anglo-Saxons to have followed in the wake of the Scandinavians, the earliest recorded discoverers of that continent, and to have left traces as well of their language as of their skill in the arts of civilized life, evinced, as is alleged, by the remains of pottery, and of well-formed bricks, which are found at considerable depths below the surface, and ascribed by the Indians themselves to an epoch long anterior to the fifteenth century, or that of Columbus and Cabot.* The place is very small and though situated amidst swamps, is said to be as free from intermittent fever as any part of New Jersey. The weather on this and the preceding day was remarkably temperate and agreeable, just like what we usually experience at this season in England, and in the evening became extremely cool and fresh, with some stratified clouds forming, thought by our worthy host (who in this instance showed himself a true porphet), to portend a change to wet.

---

* See Kalm's Travels into North America, vol. ii. p. 31 (English Translation).

I have often heard it remarked, and my own experience as far as it goes, confirms the observation, that the excessive heat of summer in the northern and middle states, rarely continues for more than a very few days without a change to cool, damp, or cloudy weather, which, unless it incline too much towards this opposite extreme, as it is apt to do near the close of the season, proves very refreshing and beneficial to the earth and its inhabitants. Even in the height of summer a shift of wind to the east or north-east will make a fire very agreeable, if not indispensable, at least of an evening. It is remarkable, that the east wind in this country, though coming over a vast ocean, and consequently charged with humidity, excites and irritates the nervous system of those susceptible of its noxious influence as in Europe, but with this difference in its sensible qualities, that whilst with us this unwholesome blast is harsh, dry, and mostly accompanied with clear weather, here it is damp and brings with it an atmosphere loaded with clouds and vapours. In the New England States, easterly winds prevail along the coast in the spring and early summer as much as they do with us, and with the same injurious effect on vegetation; they do not, however, usually blow far inland, and hence form a common subject of complaint against the climate of Boston, to persons coming from the interior of Massachusetts at the season of their prevalence.

That well known and humorous definition of the English summer, three hot days and a thunder-storm, interpreted with all the limitation due to proverbial expressions, does but describe those fluctuations of temperature and varying aspect of the sky, to which the climate of the United States is subject, in common with our own. In point of steadiness, I am persuaded the balance is little, if at all, in favour of America, (I speak now of that part of it including Pennsylvania, Maryland, Delaware, New Jersey, and the other maritime states to the northward of these,) whilst in abrupt and extreme transitions from heat to cold and the reverse, the advantage is unquestionably on our side of the Atlantic.

The much higher temperature of the summer months, from May to August inclusive, which prevails over the greater part of the United States,* is what chiefly strikes a stranger from central Europe on his arrival, but this heat is so unequally distributed, that many days in succession may intervene between the spurts of hot weather, which would be reckoned temperate even in our own more moderate and equable climate. I have known such days to occur during which the sun has shone out uninterruptedly, but more commonly on these occasions the sky is either partially or wholly overcast (as it frequently is at all times of the year), with cumulo-stratus, nimbus, and other dense forms of cloud, or else a thin white veil or canopy of stratus, or cirro-stratus comes opportunely, after a day or two of broiling weather, to temper by its welcome interposition the fervour of the sun's rays.

There is, perhaps, no subject on which it is more difficult to obtain a clear, just, and impartial account than that of the climate of any country. Our views of it, as of politics, are sure to be more or less distorted by the mirage of prejudice, interest, physical constitution, or natural vanity, across which we take them.

It has been the fashion with a certain cosmopolite class of Englishmen to decry their own climate (of the acknowledged defects of which I have no wish to become the bigoted defender), and to laud that of every other country till they have persuaded their own nation and foreigners that we live in a perpetual Cimmerian darkness, engendered of fog, damp, and drizzle, which every Frenchman, of course, devoutly believes we do. Hence our countrymen when they go abroad, are so impressed with opinions gleaned from books of travels of the superiority of *all* foreign climates, that to their mental vision everything in nature seems tinged with the adventitious hue which an exalted imagination flings over it. We hear a great deal said by the herd of tourists about the greater clearness of the sky and air, the freedom from fog and damps, the brighter colours of the flowers, and finer flavour of the fruits, the larger growth of the trees, and a thousand other perfections and immunities, denied it would appear to our unlucky fatherland alone.* Yet a close observer of facts will often see cause for believing that much of this alleged superiority is assumed on that kind of credit which takes, on the dictum of others, what indolence or inattention will not be at the pains to correct or disprove. We are, besides, naturally apt to think we see that which we have been taught to believe we ought to see, and hence many popular fallacies pass current and unquestioned amongst the mass of mankind, because based on conclusions drawn from commonly admitted, but erroneous premises. Without pretending to be freer than others from those prejudices or partialities which warp the judgment of travellers on this and other many-sided questions, I have noted down, at intervals, as occasion or convenience suggested, the result of my observations on the climate of the United States, always with a desire to see things as they are, and fully sensible that a single year passed in traversing a zone of such extent as that country comprises, gives me no right to pronounce dogmatically for or against its climate.

---

* I say here the *greater part*, because I shall hope to show in the sequel, that between a certain latitude in America, the mean heat of summer actually falls below that of the corresponding parallels in Europe, contrary to the commonly received notion that the transatlantic summers are as much hotter as the winters are colder, than on the same degrees of latitude in the Old World.

I carried out with me (chiefly with the view of ascertaining the mean temperature of the earth's surface by trying that of springs and wells) a very delicate standard thermometer of Newman's, having a slender cylindrical bulb, and graduated for all ordinary atmospheric ranges, to accord exactly with others in my possession by the same accurate maker for comparison on my return home. But this soon shared the fate that usually befalls these fragile aids to science, when on foreign service, nor could I replace its loss by an instrument of equal susceptibility, or on whose scale I could as perfectly rely. I found, too, that even when stationary, it was seldom possible for me to make choice of a situation in which a thermometer could give results worth recording from the effect of radiation or of improper aspect; besides, that the publicity of a traveller's ordinary places of sojourn in America puts his apparatus in perpetual danger of breakage, and it may be even of abstraction.* Add to these difficulties the impossibility of making a continuous or regular series of observations, and the propriety of omitting such notices of temperature, except in an occasional way, will, I think, be obvious to most persons.

---

* I once heard an individual relate, that being recommended for his health to try a *warmer* climate, he decided on crossing from Dover to Calais, and returned home after some weeks vastly improved, he told me, by the *milder* atmosphere of *la belle France*. So much for a name!

With regard to the greater clearness, or (to speak more correctly) increased transparency, which so many travellers pretend to discover in the transatlantic atmosphere, over that of Europe, or, at least, of our own, I apprehend that there, as in England, and most other parts of the temperate zone, this attribute belongs rather to the colder than to the warmer seasons of the year, or when a low dew point indicates that the air has reached a perfect state of aqueous solution, as in the case of frosts, &c. I have already adverted to the remarkable prevalence of haze in the United States, and shall have occasion in the sequel to refer to the frequency with which the sky is overcast, sometimes for days, nay almost for weeks together.† And though I have brought much observation to bear upon the point, I could never perceive any sensible distinction betwixt the tone or colouring, as a painter would say, of an American and European sky, or could detect any peculiarity in the varying aspect of the one which was not as much a property of the other.

---

* I hope I shall not be accused of unfounded insinuations against the honesty of the American nation in hinting the possibility of the latter contingency, and so be compelled to take them at their word, and fall back, for my own defence, on the rather startling request one finds posted up in every sleeping-room of most hotels in that country,

"Please to lock and bolt your door at night to prevent robbery."

I believe there is as much security for property as well as person in the United States, as in any country in the world; did our hotels swarm like theirs with strangers of all classes, arriving and departing at every moment of the day and night, a similar warning to the above would not be unnecessary.

† I find, by my journal, that at Philadelphia from the 31st of October to the 15th of November (inclusive) 1846, the weather was constantly wet or thickly

August 20th. Left Batsto after breakfast for Quaker Bridge, a few miles further on, through a country similar to that traversed yesterday. The plants remarked growing about the former place were such as had been previously observed on our way thither in the morning, and on reaching the latter we found, to our great annoyance, much of our best botanizing ground under water, and of course inaccessible. Our first object was to secure the rare *Schizæa pusilla*, which Mr. James, who had gathered it here on a former occasion, quickly pointed out to my admiring gaze, in half-swampy grounds, just over the bridge, on the further side from the hotel, on the right hand, and close by and below the road, in plenty. This curious little Fern is said to grow in Newfoundland, and a nearly allied species (*S. australis*) in the Falkland Islands; these with the present station are the only ones known as yet for the genus. From the overflowed state of the swamp, we made but few additions to our list of yesterday, and many summer plants were already out of flower. Of those we did collect, I regret to say my notes have been lost. *Narthecium americanum* was abundant on the edge of the swamp, and is probably only a slight variety of *N. ossifragum*. The capsules have the same brick-red colour, which I find bleaches by mere keeping, to nearly white. *Eriocaulon decangulare*, a fine species, often two feet high, and growing immersed, was also plentiful here; whilst a terrestrial species of Bladderwort (*Utricularia cornuta*), with erect filiform stems and small yellow flowers, occupied the damp sandy margins of the bog. *Cyperus mariscoides* was abundant in damp ground near the hotel, by which grew *Chenopodium anthelminticum* and *C. Botrys*, both probably naturalized. The hotel, a wooden building of pine boards, though homely, was clean, and

overcast, with the exception of one partially fair, and another entirely clear day; on the remainder there was scarcely a gleam of sunshine.

the people civil and attentive. We retired to our double-bedded room to be half smothered (*more Germanorum*) betwixt quilt and feather bed, which, however snug lying in the depth of winter, was rather *de trop* in the month of August, whilst the absence of mosquito curtains exposed us to the attack of those subtle invaders, whenever we ventured to bivouack for coolness and comfort outside of our downy fortress. Happily, the weather which had been cool all day, though fine and pleasant, rendered our condition supportable, and greatly thinned the forces of the enemy.

August 21st. We rose early to return to Philadelphia, by a different route from that traversed on coming hither, namely, by Medford, &c., but a heavy rain and densely-clouded sky, seemed to betoken a wet day. The weather, however, improved gradually, and before noon assumed a drier and more favourable aspect, the sky the whole afternoon somewhat clouded, which by screening off the sun's rays made the temperature quite moderate. Quitting the Pine barrens, a pretty and well-cultivated country succeeded, the pastures along the roads were in many places profusely adorned with the beautiful and fragrant *Monarda punctata,* now in full flower. It is here called Horse Mint, and from it an essential oil is extracted in great abundance. At a place where we stopped for refreshment, I gathered the Butterfly Weed, *Asclepia tuberosa,* whose orange-coloured flowers are more abundant and quite as brilliant as those of the West Indies, (*A. Curassariea*) though the plant is straggling, and less elegant in habit. The species of this eminently American genus are numerous, and widely dispersed over the Union, being everywhere amongst the common plants met with. In sandy ground I gathered *Tephrosia virginica, Digitaria humifusa,* Wild Indigo (*Baptisia tinctoria*), which grows like our Broom along the borders of woods and in thickets very commonly; Button Weed (*Diodia teres, Spermacoce Diodina,* Mx.), Stagger Bush (*Andromeda mariana*), Persimmon, (*Diospyros virginiana*), and Holly (*Ilex opaca*). Betwixt Medford and Camden we saw an entire pasture field quite yellow with the charming *Cassia Chamæcrista,* called here Sensitive Pea, or

Partridge Pea, a less showy, but, to my mind, a more beautiful and elegant species than *C. marilandica,* and less common than either that or *C. nicticans,* in the vicinity of Philadelphia. All three exhibit a high grade of vegetable irritability, the leaflets closing together almost as soon as gathered, or even when rudely handled or brushed by the feet in walking through the herbage. The evening was much clearer, and quite, though not disagreeably cool; night, fine starlight, when we reached Philadelphia, about 9, P.M. The various *Orthoptera* and *Hemiptera,* Crickets, Locusts, Cicadas, &c., which so abound here, were very busy and loud after sunset, even with the now diminished temperature; the Katydids, in particular, were extremely loquacious and importunate. The two succeeding days were very damp, close, and overcast, with mizzling rain and much wet at night.

August 24th. Found Mr. James this morning with his hand in a terrible state from accidental contact, during our late expedition, with the Poison Oak or Poison Vine (*Rhus toxicodendron* or *R. radicans*), though where, or at what moment, he touched one or other of these venomous shrubs, he was quite unable to say. This gentleman is so susceptible to the poisonous influence of these plants and of the swamp Sumach (*R. venenata*) that momentary contact, or a brush from a branch in passing through a thicket, or getting over a fence, is sufficient to induce in him the usual irritative inflammation. For this reason he is obliged to be constantly upon the look-out for his "old friends," as he jocosely calls them, which unfortunately abound too much in the haunt of the botanist, to be easily avoided by him, whatever may be his vigilance and circumspection. To persons so constituted, this liability to meet an envenomed foe at every step, is a great drawback to the enjoyment of a sylvan stroll, as to others would be a ramble through a grove filled with wasps' nests. Mr. J. finds Ammonia the best antidote to the poison of the *Rhus,* and generally carries a small phial of it about him when in the country. In the present case, the remedy was applied too late to avert the consequences it could only assuage. When I called this day, a large space on the back of the hand was covered with vesicles, the cuticle was in part cracked and excoriated, and the entire appearance was that of a severe burn or scald, from which he had no expectation of recovering for, at least, a week or ten days to come.

The account given by Kalm * of the effects of these poisonous Sumachs on himself and others, coincides with my own experience and the relation made to me by individuals who have themselves suffered from the venom. He, however, goes farther in his narrative of their mischievous powers than I am prepared to attest, as when he says that some dare not meddle with the tree (*R. venenata*) whilst its wood is fresh, nor can venture to touch a hand which has handled it, or even to expose themselves to the smoke of a fire made with its wood. Neither can I confirm what he asserts of himself and his servant, that the same person may be proof against the poison at one time and not another, and that even handling the seeds and wood in winter, when both these and the hands are cold, is not always a safe proceeding. These particulars coming from such respectable testimony, must be supposed correct; for my part, I can only say, that I have repeatedly tried all these species whenever an opportunity offered, the leaves, flowers, seeds, and wood, in summer and winter, when cool, and heated by exercise and the weather, and have uniformly failed to induce in myself the slightest symptoms of poisoning. It is to the *Rhus radicans* or *toxicodendron* that Moore alludes in his beautiful ballad, The Lake of the Dismal Swamp:—

"And when on earth he sunk to sleep,
If slumber his eyelids knew,
He lay where the deadly vine doth weep
Its venomous tear, and nightly steep
The flesh with blistering dew."

(*To be continued.*)

---

* Travels into North America, vol. i. p. 77 to 82, and Id. p. 177 et seqq. (English Transl.) It is just a hundred years since Kalm, who was one of Linnæus's most distinguished travelling pupils visited America. In matters not affected by lapse of time, as his observations on Natural History and Botany, the face of the country and its climate, having gone over the same ground as he did, I can bear witness to the general accuracy of his statements, which renders his book still worthy of perusal, even in its execrable English dress, by a foreign translator, and in spite of some anilities and a vein of credulous simplicity which pervades the volumes.

HERBARIUM *of the late* DR. THOMAS TAYLOR.

We have previously announced the intention of the family to dispose of this fine Herbarium of Cryptogamic plants, and we are now given to understand, that if not taken by private contract, it will be offered for sale in London. The value set upon the entire collection, by competent judges, is £200. It is probable, in the case of a collection so rich as this is in the several departments of Cryptogamiæ, that the object of the present possessor would best be gained by offering them in sets, according to the several families:—viz., *Ferns*, *Mosses* and *Hepaticæ*, *Lichens*, *Fungi*, and *Algæ*. Under any circumstances, we trust they will be sent to London for inspection, unless a liberal offer is previously made for them, and then they could be inspected by persons wishing to purchase. Our following number will probably contain particulars relative to the extent of the Herbarium.

Arrival of Plants from SWAN RIVER, *the* ANDES OF QUITO, *and* CALIFORNIA, *for sale.*

Mr. Heward, Young Street, Kensington, has lately had confided to him several sets of plants from Mr. Drummond, about four hundred in number, in continuation of the former sets, which have been collected during an extensive overland journey to King George's Sound. From Dr. Jameson, also, Mr. Heward has received specimens of Phænogamous plants from the Andes of El Equador, and rich collections of Cryptogamiæ, chiefly *Mosses*, from the same regions.

Mr. Hartweg (Turnham Green, Chiswick) is distributing to the subscribers his well-preserved plants (about four hundred in number) recently brought from California.

Copie d'une Lettre écrite à M. PARLATORE *de Florence par* M. AUGUSTE DE S. HILAIRE.

Janvier, 1848.

J'ai lu dans votre excellent journal la description que M. Tenore

a faite sous le nom de *Pogostemon suavis* de la plante connue des parfumeurs sous celui de *Patchouly*; et j'espère que vous voudrez bien me permettre d'ajouter quelques mots à l'histoire de cette *Labiée*. Elle fleurit pour la première fois en France pendant l'hiver de 1844 dans la serre d'un amateur de la ville d' Orléans. M. le Dr. Pelletier Sautelet, professeur d'Histoire Naturelle à l'école préparatoire de médecine de cette ville, fut invité a en faire l'examen : il ne tarda pas à reconnaître que c' était une espèce nouvelle du genre *Pogostemon*, et au mois de Mars 1844 il en fit paraître la description sous le nom de *Pogostemon Patchouly* dans le tome v. des Mémoires de la Société Royale des Sciences, Belles Lettres, et Arts d'Orléans, recueil òu se trouvent plusieurs dissertations fort remarquables. M. Pelletier ne s'est pas contenté de la description du *Pogostemon Patchouly*, il y a joint une figure et des observations morphologiques d'un haut intérêt : un exemplaire de l'écrit de ce savant, que je joins à cette lettre, vous montrera la parfaite exactitude de ces différents faits. Il est clair d'après tout ceci que la plante dont il s'agit doit porter le nom de *Pogostemon Patchouly*; mais on devra à M. Tenore de l'avoir fait distinguer parfaitement du *Pogostemon plectranthoides*, Desf., et sa description restera comme une nouvelle preuve des efforts que M. Tenore n'a cessé de faire pour contribuer aux progrès de la botanique. * * * * *

NOTICES OF BOOKS.

Nederlandsch KRUIDHUNDIG ARCHIFF. By MESSRS. DE VRIESE, DOZY, and MOLKENBOER. Leyden, 1846–7.

Our ignorance of the Dutch language unfortunately prevents us from deriving all the information we could wish from this Journal, stamped as it is by the authority of the respectable names above given : the more strictly scientific matter, that is, the specific characters and descriptions, are in Latin, and there is no lack of interest

in the materials. The Dutch Herbaria, it is well known to all who have visited them, are pre-eminently rich in the plants of the Malayan Archipelago, and a more ample field for novelty no where exists, which not the splendid Flora Javæ, and the Rumphia of Professor Blume, nor the more humble "Bijdragen tot de Flora van Nederlandsch Indië" of the same author, nor the beautiful Kruidkunde of Dr. Korthals, can exhaust.

The work opens with a Bijdragen, or Prodromus of the Flora of Sumatra, by De Vriese, where twenty-one Ferns are noticed, and four *Araliaceæ* (to be continued). The same author elsewhere describes *Hymenocallis Borrkiana*, *Lansbergia Caracasana*, (Indiæ), *Zamia muricata* and *Encephalartus Altensteinii*, and he edits Splitgerber's Reliquiæ Botanicæ Surinamensis. Korthals writes on Borneo, Java, on *Dipterocarpus Bandii*, on the *Myrtaceæ* and *Ranunculaceæ* of the Dutch East Indies; and some memoirs on the vegetation of those countries, which we could heartily wish to see translated into French or English: Molkenboer, on the Cryptogamic Flora of Holland: Bosel, on Dutch Algæ; Van Hoven on the plants of Maastricht, &c. We are in possession of three numbers of the work, and we trust it will be continued, and will prove a medium of making known some of the numerous treasures in the Musea of the Botanists of Holland.

Flora of FORFARSHIRE; *by* WILLIAM GARDINER, Dundee, 1848.

This little volume furnishes a Catalogue (for there are no generic or specific characters) of the Plants that have been detected in the rich Scottish district of Forfarshire, a spot celebrated by the researches of a Don and a Drummond, and in which the energies of Mr. Gardiner are now called forth. Few, indeed, are the botanists interested in Scottish plants who have not explored those glens and mountains, the latter of which attain an elevation of 3,000 feet, and certainly furnish more rare alpine plants than any region of like extent in Great Britain. The book, however, is not a mere catalogue: there are many interesting remarks bearing on the peculiarities of the scenery, vegetation, geographical distribution, &c., intermixed with numerous scraps of poetry, a brief memoir of Mr. Don, and a longer one of Mr. Drummond. The author follows the Natural arrangement, and includes the Acotyledonous plants, though these, it may be presumed, are far from offering a perfect list, especially in the *Algæ* and *Fungi*.

ASA GRAY; *Botany of the Northern United States.* 1 vol. large 12mo. *Boston and Cambridge, U. S. A.* 1848.

The name of Dr. Asa Gray is a sufficient guarantee for the good execution of this work, which includes an area of the United States, extending "from New England to Wisconsin and south to Ohio and Pennsylvania, inclusive." This territory has been, doubtless, better explored than any other portion of the United States, and probably as much so as any portion of Europe; and the book has, too, the rare merit among American Floras of including the Cryptogamiæ (Algæ and Fungi excepted) as well as the flowering-plants: the Lichens, indeed, being printed apart, as will be presently noticed. The whole is arranged in natural families, and is accompanied by an introduction, containing "Brief outlines of Botany," and a "Glossary of Botanical Terms." The work is in English. The generic and specific characters are as brief as possible to be useful; and there are no synonyms. It is, indeed, an admirable text-book for the student, whether in the field or in the Herbarium; and those who desire further information on the plants of the Northern States, will doubtless have recourse to the Flora of N. America, by Messrs. Torrey and Gray, which, after some delay, is, we are happy to find, now progressing.

Of the Botany of the Northern United States, the *Musci* and *Hepaticæ* are described by Mr. Sullivant, whose labours in those departments of Botany we have more than once had occasion to notice with high commendation.

Tuckerman, Edward, Esq.; *Synopsis of the* Lichens *of the Northern United States and British America.*

This useful synopsis appears, indeed, in one of the volumes of the Proceedings of the American Academy of Arts and Sciences, but it was prepared for Dr. Asa Gray's work, noticed in the preceding article, "enlarged by the addition of many species *from Arctic America and from the Pacific coast*;" the latter, we presume, almost entirely, if not wholly, derived from the collections of our British Arctic travellers and voyagers, and of Messrs. Douglas and Scouler, though this is not very distinctly acknowledged. What Mr. Sullivant is in America among the *Mosses* and *Hepaticæ,* and what the late Dr. Schweinitz was among the *Fungi,* Mr. Tuckerman is among the *Lichens.* And this distribution of labour is of inestimable advantage to the promotion of science. The system here adopted is that of Fries, in his *Lichenographia Europæa reformata,* with some emendations, derived from his later works. The characters of the sections and genera in the *Lichenographia* have been throughout the basis of those now given, and in part are adopted entire. The N. American *Lichens* are here grouped into twenty-nine genera. A great number of the species, as we had anticipated, are the same as those of Europe.

Genera Floræ Americæ *Boreali-orientalis illustrata. The genera of the Plants of the United States, illustrated by figures and analyses from nature, by* Isaac Sprague; *superintended, and with descriptions, &c, by* Asa Gray, M.D., &c., &c. vol. i. plates 1–100. Royal 8vo. Boston, 1848.

The progress of art and science in the United States of America is, perhaps, nowhere better exemplified than in the volume now before us, which, if carried to completion, will, we hesitate not to say, rank among the most valuable and useful works that have appeared in any country. The "Genera Plantarum Floræ Germanicæ iconibus et descriptionibus illustrata," of Théod.

Fred. Nees von Esenbeck; and the Iconographia Generum Plantarum of Endlicher, seem to be the models on which this work is cast; and we trust it will not meet with the same untimely fate as has befallen them. The work is intended "to illustrate the Botany of the United States by figures, with full analyses of one or more species of each genus, accompanied by descriptive generic characters and critical observations." The figures are, in all cases, delineated directly from nature by Mr. Sprague, and from the living plant, wherever that is practicable. A great advantage in their publication is that "the illustrations are not drawn from various orders or classes, at random or convenience; but the natural families are taken up in regular sequence, according to the arrangement now most prevalent among botanists (we need hardly stop to assure our readers that of De Candolle, and of the Flora of N. America, with slight alterations), and all the genera of each family are published together, in their proper places, thus rendering the volumes systematically complete, as they appear." It is the determination of the authors to proceed with the work to its completion (in about ten volumes, like the one that now appears) if the patronage received shall warrant the hope of a moderate remuneration to the artist. "The ample and rapidly accumulating materials," continues Dr. Gray, "both of specimens in the Herbarium, and of living North American plants in the Botanic Garden under my charge, and the prompt assistance offered by a large number of zealous correspondents, while they afford unusual advantages for the purpose, render me increasingly desirous to turn them to useful account, by prosecuting an undertaking, which may serve to facilitate the more thorough study of botany in this country, and perhaps contribute in some degree to the general advancement of the science."

The plates are *engraved* upon steel by Mr. Joseph Prestale, educated at Munich. In regard to geographical extent, the work comprises all the plants of the Federal Union, and includes Texas, and the States of Arkansas and Missouri.

The present volume extends to *Portulaceæ*, and most earnestly do we wish success to so laudable an undertaking.

Memoir of a Tour to Northern Mexico, in 1846 *and* 1847, *by* A. WISLIZENUS, M.D., *with three maps:—and a sketch of the Botany of* Dr. A. WISLIZENUS' *Expedition from Missouri to Santa Fè, Chihuahua, Parras Saltillo, Monterey, and Matamoros, by* Dr. ENGELMANN. Washington, 1848.

The Tour itself is a very remarkable one, and made at a season during which it was not unaccompanied with difficulty and danger. The author's object was most praiseworthy: "I desired to examine the geography, natural history, and statistics of the country;" and his narrative is full of information on these heads. But what chiefly concerns the readers of our Journal is the Botanical collection, which Dr. Wislizenus wisely entrusted for publication to our friend Dr. Engelmann of St. Louis; and that gentleman has been able, in the appendix, to give a general view of the Flora of the regions traversed, and to describe some of the most interesting new plants. He would have done thus with the entire collection, had he not been, in St. Louis, much cut off from access to large Herbaria and public libraries. The want of them will, no doubt, have occasioned some plants to be described as novelties which have elsewhere appeared in European works; and this, we suspect, is especially the case with the *Cacteæ,* of which a very great number of species are stated to be new. Nevertheless, this is a very valuable addition to our knowledge of the botany of a region of great interest (extending through 2,232 English miles of country), and hitherto almost wholly unexplored.

Descriptions of Plants, collected by Mr. WILLIAM GAMBEL, *in the Rocky Mountains and Upper California; by* THOMAS NUTTALL. (Extracted from the Proceedings of the Academy of Natural Sciences of Philadelphia.)

We are glad to find the veteran Nuttall, so long identified with the botany of America, again engaged in his favourite pursuit of describing new genera and species of plants of N. America.

Mr. Gambel appears to have made an extensive journey as a naturalist in Upper California, where he amassed a considerable collection of plants. "The best part of the collections," however, we learn from a private communication of Mr. Nuttall (no particulars of the journey being given in the work), "were lost on the route between Missouri and Santa Fè, having been committed to the charge of a person who never delivered them. What remain (about 350 species) were gathered on the journey from Santa Fè to Upper California. Among them are plants of considerable interest, particularly two new genera, as they appear to be, discovered on the island of Catalina, off the coast of St. Pedro, in the Pacific. One is *Gambelia* (Nutt.), of the Nat. Ord. *Scrophularineæ*, Sect. *Antirrhineæ*: a very handsome shrub, three or four feet high, with rather large tubular bright scarlet flowers, of which I have not seen the perfect seed. It appears somewhat allied to *Galvesia*. The second, without any natural affinity whatever to *Pæonia*, has flowers resembling a small kind of that genus, and is also a shrub four to five feet high, with cuneate small alternate leaves and white flowers, about the size of large apple blossoms; but its striking character lies in the seed, which is nearly surrounded by a circular arillus, torn into so copious a fringe, that on opening the capsule, the seeds seem to be wrapped in tow." This plant constitutes a new genus in the present work, and has the name of *Crossocoma*, Nutt. Many new genera and a great number of new species are here given, including many of Mr. Nuttall's own discoveries (particularly among the *Corollifloræ*); and a continuation of this paper may be looked for in the succeeding number of the Proceedings of the Academy.

The BRITISH DESMIDIEÆ; *by* JOHN RALFS: *the Drawings by* EDWARD JENNER. London: Reeve, Benham, & Reeve. 1848.

A work of first-rate merit; whether we look to the descriptive matter, or to the beauty and execution of the plates. It does honour to the authors, and to the age and country in which it has appeared. At present, we can only recommend it, in general terms, to the public; but we must revert to it more in detail in a future number of our Journal. The full list of subscribers is a convincing proof of the esteem in which Mr. Jenner and Mr. Ralfs were held before the appearance of this publication.

Travels in CEYLON *and Continental* INDIA, (*with scientific Appendices*) *by* DR. W. HOFFMEISTER, *Travelling Physician to his Royal Highness,* Prince Waldemar of Prussia. Translated from the German. Edinburgh. 1848.

The untimely end of this promising naturalist is known to most of our readers. While present with his Royal master, as spectator at the battle of Ferozeshah, he was struck by a grape-shot which entered the temple. "He fell forward to the ground. The Prince instantly sprang from his horse and raised him; but the vital spark had already fled. The advance of the forces compelled the survivors to move on, leaving the slain on the field of battle; nor was it till after two days had elapsed, that the body was found and interred in the same tomb with several of his friends who fell on that bloody day. A simple monument is erected in the burying-ground, by Prince Waldemar, to the memory of his faithful physician and beloved companion."

The volume consists of private letters, written for his own immediate circle of relatives and friends. Fragments of botanical and zoological information, which were scattered through his posthumous papers and could not well be introduced into the series of letters, have been appended separately. It is on account of the former of these, the botanical fragments, that we notice the work in this Journal. There is a great deal of interesting information relating to the more striking and useful vegetable productions. One paper is on the vegetation of the Himalaya mountains, and another, addressed to Baron Humboldt, "on the geographical distribution of the *Coniferæ* on the Himalayan range:" the latter indicates considerable research. The fair translator of the work, whose name nowhere appears in the volume, has well performed her part, and not only as a translator, for she has added many valuable notes, the result of extensive reading, both in history and science.

Contributions towards a FLORA OF BRAZIL, *being the distinctive characters of some new species of* COMPOSITÆ, *belonging to the tribe* SENECIONIDEÆ. By GEORGE GARDNER, Esq., F.L.S., Superintendent of the Royal Botanic Gardens, Ceylon.

(*Continued from* p. 296.)

4928. S. *oblonga*; caule simplici piloso, foliis petiolatis oblongis utrinque acutiusculis serrato-dentatis triplinerviis subtus grosse reticulato-venosis, venis prominulis, utrinque piloso-scabridis, pedicellis terminalibus solitariis elongatis versus apicem hirsutis, involucri squamis exterioribus in appendicem foliaceam obovatam obtusam glanduloso-dentatam hirsutam productis, intimis lineari-oblongis obtusis glabris.

HAB. Dry upland Campos in the Diamond District. July, 1840.

Herba perennis. Caules plures ex eadem radice, sesquipedales. Folia opposita, 3½–4 poll. longa, 12–15 lin. lata. Pedicelli 6 lin. longi. Capitulum hemisphæricum. Involucrum 5 lin. longum.

VIGUIERA, *H. B. et K.*

In my Brazilian collection of *Compositæ* I find a number of species which are referable to the genera *Viguiera*, *Leighia*, and *Harpalium*; but, after a careful comparison of the characters of these genera, I find that the only real difference between them is a mere modification of the involucrum, and as this is not considered of sufficient importance to characterize genera in other tribes of the Order, I purpose to follow up the suggestion thrown out by De Candolle, under the article *Leighia*, in the fifth volume of the Prodromus :—" Forte *Viguiera*, *Leighia*, et *Harpalium* in unicum genus congreganda." As he had several new species to add to each of these genera, it is to be regretted that he did not unite them all in one natural genus. In this case, however, as in many others, he followed too implicitly the opinions of Cassini and Lessing, on the genera of *Compositæ*.

If we trace the history of these three supposed genera, it will be found that *Viguiera* is the oldest, having been established by Humboldt et Kunth, in 1820, in the fourth volume of the Nova Genera. In the following year *Harpalium* was constituted by Cassini, in the twentieth volume of the Dict. des Sc. Nat.; and next year, that is in 1822, *Leighia* was established by the same author, in the twenty-fifth volume of the same work. It is to *Viguiera*, therefore, that all the species which have been enumerated under the three genera must be referred.

The nearest affinity of these plants is evidently with *Helianthus*, being only distinguished from it by the squamellæ which exist between the aristæ of the pappus. This difference was, however, considered of so little importance by Lessing, that in his Synopsis (1832) he placed *Harpalium* and *Leighia* as subgenera under *Helianthus*, retaining *Viguiera* as a distinct genus, but with a technical character scarcely different from that of *Helianthus*.

I have divided the genus, as now modified, into four sections, all of which have already been indicated either as distinct genera or sections. If any of the species thus associated together have at all characters by which they may be distinguished generically from the others, it is the two which are put into the section *Harpalium*. In both of them the achenia of the ray are entirely destitute of pappus, and therefore, in this respect, hold the same relation to the other sections of *Viguiera*, that *Doronicum* does to *Senecio* and its allies; but then the section *Harpalagia*, which immediately precedes it, contains species, some of which have the pappus of the ray merely dentate, while in others it is squamellate, and thus forms a transition from *Harpalium* to the preceding sections.

VIGUIERA, *H. B. K. Nov. Gen.* 4. *p.* 224.—LEIGHIA, *Cass. Dict.* 25. *p.* 435. — HARPALIUM, *Cass. Dict.* 20. *p.* 299.— HELIANTHI *sp. Auct.*

Char. Gen. *Capitulum* multiflorum heterogamum, floribus *radii* neutris ligulatis, floribus *disci* tubulosis hermaphroditis. *Involucri* squamæ bi- aut pluri- serialibus æquales aut inæquales laxe aut stricte imbricatæ, exteriores apice sæpe in appendicem

foliaceam productæ. *Receptaculum* planum aut convexum, paleis plus minus amplectentibus persistentibus obtusis aut acuminatis. *Corolla* disci tubus brevis, faux amplior cylindracea, dentes 5. *Styli* rami appendiculati. *Achænia radii* abortiva linearia pappo 2–3-aristato aristellisque aut coroniformi dentato superata aut calva, *disci* obovato-oblonga compressa pappo 2-3-aristato et plurisquamellato, squamellis acutis sæpe basi connatis.—Herbæ *aut* suffrutices *Americanæ habitu* Helianthi; foliis *alternis vel oppositis, integris vel serrato-dentatis, triplinerviis vel rariter penninerviis*; capitulis *pedicellatis, solitariis aut subcorymbosis, flavis.*

SECT. I. EUVIGUIERA.

Involucrum 2-seriale, squamis subæqualibus, exterioribus apice in appendicem foliaceam productis. Achænia radii et disci pappo 2–3-aristato aristellisque superata.

1731. V. *hirsuta*; caule simplici vel subramoso erecto tereti hirsuto folioso, foliis oppositis subsessilibus oblongo-lanceolatis utrinque acutis triplinerviis margine glanduloso-denticulatis utrinque sparse hirsuto-villosis, pedicellis terminalibus solitariis dense hirsuto-villosis folio subæquantibus, involucri squamis 2-seriatis, exterioribus oblongo-lanceolatis acutis foliaceis laxis integris hirsutis disco longioribus, intimis lineari-oblongis obtusis membranaceis margine ad apicem ciliolatis, ligulis lineari-oblongis bidentatis, achæniis oblongis compressis villosis, pappo aristis 2–3 et squamellis acutis irregularibus plurimis constante.

HAB. Dry open places on the Serra de Araripe, Province of Ceará. Nov. 1838.

Radix lignosa. Caules plures, subpedales. Folia opposita, 2–2½ poll. longa, 6–9 lin. lata. Involucrum 10 lin. longum. Capitulum flavum, ligulis pollicem longis.

3860. V. *elegans*; caule simplici erecto tereti striato hirto folioso, foliis oppositis subsessilibus lanceolatis utrinque attenuatis triplinerviis margine glanduloso-denticulatis utrinque piloso-hirsutis, pedicellis terminalibus hirsutis folio brevioribus solitariis, involucri squamis 2-seriatis, exterioribus oblongis acutis foliaceis laxis margine subdenticulatis extus hirsutis disco longioribus, intimis linearibus acuminatis membranaceis puberulis, ligulis oblongis acute bidentatis, achæniis oblongis compressis villosis, pappo aristis 3 circiter et squamellis acutis pilosis subirregularibus plurimis constante.

Hab. In dry upland Campos near Villa de Arrayas, Province of Goyaz. April, 1840.

Radix usque ad collum lignosa. Caules plures ex eadem radice, vix pedales. Folia opposita, 2–3 poll. longa, 6–8 lin. lata. Involucrum 8 lin. longum. Capitulum flavum, ligulis pollicem longis.

Near the preceding species, from which it differs in being less hairy, and in having the inner scales of the involucrum acuminated, not obtuse. The ligules are, besides, broader and more deeply bifid at the point. The pappus consists sometimes of as many as four aristæ, and occasionally several of the small intermediate ones are united together at the base.

4236. V. *glabra*; simplici erecto tereti striato glabriusculo, foliis oppositis sessilibus lineari-lanceolatis utrinque attenuatis triplinerviis integerrimis utrinque glabriusculis, pedicellis terminalibus solitariis folio sublongioribus, involucri squamis 2-seriatis, exterioribus lineari-lanceolatis acutis foliaceis glabriusculis disco longioribus, intimis linearibus acuminatis, ligulis oblongis obtusis obscure bidentatis, achæniis lineari-oblongis pilosis subcalvis 3-aristatis et parce squamellatis.

Hab. Open upland Campos, near Nossa Senhora d'Abadia, Province of Goyaz. May, 1840.

Radix lignosa. Caules plures, semipedales. Folia opposita, 2½ poll. longa, 3 lin. lata. Involucrum 6–7 lin. longum. Capitulum flavum, ligulis 10 lin. longis.

4239. V. *Humboldtiana*; caule subramoso erecto tereti striato pubescente, foliis oppositis sessilibus oblongis utrinque acutis vel obtusiusculis triplinerviis serratis utrinque puberulis, pedicellis terminalibus solitariis folio multo longioribus, involucri squamis 2-seriatis, exterioribus lanceolatis obtusis foliaceis puberulis disco longioribus, intimis oblongo-lanceolatis acuminatis, ligulis oblongis obtusis 3-dentatis, achæniis oblongis compressis glabris 2–3-aristatis, aristis scabridis, squamellis intermediis paucis acutis.

HAB. Arid upland Campos near Nossa Senhora d'Abadia, Province of Goyaz. May, 1840.

Radix lignosa. Caules plures, subpedales. Folia opposita, 1–1½ poll. longa, 6–8 lin. lata. Involucrum 6–8 lin. longum. Capitulum flavum, ligulis pollicem longis.

2217 et 2218. V. *Bonplandiana*; caule erecto ramoso tereti striato villosiusculo, foliis oppositis petiolatis ovato-oblongis vel oblongo-lanceolatis acutis basi in petiolum cuneato-attenuatis triplinerviis serrato-dentatis utrinque adpresse pilosis, petiolis villosis, pedunculis terminalibus solitariis folio multo longioribus, involucri squamis 2-seriatis, exterioribus lineari-oblongis acutis foliaceis pilosis ciliatis, intimis lineari-lanceolatis acuminatis membranaceis glabris ligulis late oblongis obscure bidentatis, achæniis oblongo-cuneatis compressis villosis 2–3-aristatis, squamellis intermediis plurimis basi connatis.

HAB. In moist open places between Boa Esperança and Santa Anna das Mercês, Province of Piauhy. March, 1839.

Radix lignosa. Caules plures, subpedales. Folia opposita, 1½–2½ poll. longa, 10–14 lin. lata. Involucrum 4½ lin. longum. Capitulum flavum, ligulis 7½ lin. longis.

This differs from the last species in having the leaves cuneate at the base, the pedicels shorter, and the capitula much smaller.

3285. V. *Kunthiana*; caule simplici erecto tereti striato glabriusculo, foliis oppositis sessilibus linearibus 3-nerviis integris adpresse pilosis, pedunculis terminalibus solitariis elongatis piloso-puberulis, involucri squamis 2-seriatis, exterioribus oblongis acutis subfoliaceis scabris disco vix longioribus, intimis lanceolatis acutis, ligulis lineari-oblongis profunde bifidis, achæniis obovato-oblongis compressiusculis glabris 2–3-aristatis, squamellis intermediis paucis acuminatis.

HAB. Dry upland Campos near the Mission of Duro, Province of Goyaz. Oct. 1839.

Herba perennis. Caules plures, 2–2½-pedales. Folia opposita, 2–3 poll. longa, 1–1½ lin. lata. Involucrum 4 lin. longum. Capitulum flavum, ligulis 10 lin. longis.

Readily distinguished from all the other species of the section by its elongated slender stems, and long narrow leaves. Two or three of the outer scales of the involucrum are somewhat smaller than the rest.

4927 (bis). V. *tenuifolia*; caule simplici erecto tereti striato adpresse piloso-pubescente, foliis alternis vel inferioribus suboppositis longe linearibus acuminatis 3-nerviis distanter minute dentatis utrinque adpresse pilosis, pedunculis terminalibus solitariis folio longioribus, involucri squamis 2-seriatis utrinque lineari-lanceolatis acuminatis foliaceis hispidis disco longioribus, achæniis junioribus lineari-oblongis pilosiusculis 2–3-aristatis, squamellis intermediis lanceolatis laceratis basi connatis.

Hab. Serra de Curral del Rey, Province of Minas Geraës. Sept. 1840.

Herba perennis. Caules plures, sesquipedales. Folia 4–5½ lin. longa, 1½–2 lin. lata. Involucrum 6 lin. longum. Ligulæ ignotæ.

My specimen of this species has rather imperfect florets, the capitulum having been attacked by insects; but enough remains to enable me to decide on the genus, and to give the above distinctive character.

Sect. II. Leighia.

Involucrum 2–3-seriale, squamis imbricatis in appendicem foliaceam patulo-squarrosam productis. Achænia radii et disci pappo 2–3-aristato aristellisque superata.

3861 et 3864. V. *attenuata*; caule suffruticoso erecto ramoso tereti striato piloso-pubescente, foliis oppositis longe lanceolatis acuminatis triplinerviis distanter minute serrato-dentatis supra adpresse piloso-scabris subtus puberulis secus nervos pilis adpressis scabris, pedicellis ad apices ramorum 1–2 hirsutis folio brevioribus, involucri squamis 3-seriatis, exterioribus lanceolatis acuminatis foliaceis subpatulis hispidis disco brevioribus intimis membranaceis, paleis longe acuminatis, ligulis oblongis acute bidentatis involucro vix duplo longioribus, achæniis villosis 2–3-aristatis et pluri-squamellatis.

HAB. Bushy places near Villa de Arrayas, Province of Goyaz. April, 1840.

Suffrutex ramosus, 4–5 pedalis. Folia 4–7 poll. longa, 9–18 lin. lata: petioli 2½ lin. longi. Involucrum 4½ lin. longum. Capitulum flavum, ligulis 6 lin. longis.

Apparently near *Leighia buphthalmiflora*, DC., from which it seems distinguished by its petiolate leaves, and involucrum shorter than the disk.

3863. V. *asperrima*; caule suffruticoso erecto ramoso tereti striato hirsuto, foliis oppositis sessilibus lanceolatis acutis triplinerviis distanter serrato-dentatis supra adpresse piloso-scabris subtus piloso-pubescentibus, pedicellis 1–2 ad apices ramulorum hirsutis folio longioribus, involucri squamis 3-seriatis exterioribus ovato-oblongis obtusis foliaceis hispidis apice squarrosis disco brevioribus, paleis oblongis acuminatis, ligulis oblongis obtuse bidentatis, achæniis pilosis 2–3-aristatis et pluri-squamellatis.

HAB. Margins of woods near Villa de Arrayas, Province of Goyaz. March, 1840.

Suffrutex 3-pedalis. Folia 3–3½ poll. longa, 8–10½ lin. lata. Involucrum 3½ lin. longum. Capitulum flavum, ligulis 5 lin. longis.

4241. V. *floribunda*; caule suffruticoso erecto ramoso tereti striato piloso-scabrido, foliis oppositis sessilibus lineari-lanceolatis acutis basi attenuatis penniveniis serrato-denticulatis utrinque adpresse piloso-scabris, pedicellis ad apicem ramorum 1–3 subcorymbosis, involucri squamis 3-seriatis disco brevioribus, exterioribus oblongis acutis scabridis apice foliaceis subpatulis, paleis oblongis membranaceis acuminatis, ligulis oblongis apice 2–3-dentatis, achæniis oblongis compressis villosis 2-aristatis et pluri-squamellatis, aristis parvis.

HAB. Near Villa de Arrayas, Province of Goyaz. May, 1843.

Suffrutex 4-pedalis. Folia 4–5 poll. longa, 5–6 lin. lata. Involucrum 4½ lin. longum. Capitulum flavum, ligulis 7½ lin. longis.

2650. V. *ramosissima*; caule suffruticoso erecto ramoso tereti striato piloso-scabro, foliis oppositis petiolatis lanceolatis utrinque attenuatis penniveniis vel subtriplinerviis serratis utrinque adpresse piloso-scabris, pedicellis ad apices ramulorum subpaniculato-corymbosis, involucri squamis 3-seriatis disco brevioribus, exterioribus abrupte et breviter acuminatis scabridis ciliatis apice foliaceis subsquamosis, paleis oblongis membranaceis acuminatis, ligulis oblongis obscure bidentatis, achæniis villosis 2-aristatis et squamellatis.

HAB. Banks of the Rio Gurgea, Province of Piauhy. Aug. 1839.

Suffrutex 3–4-pedalis. Folia 2½–4 poll. longa, 6–8 lin. lata: petioli 2 lin. longi, villosi. Involucrum 4½ lin. longum. Capitulum flavum.

4240. V. *gracilis*; caule suffruticoso erecto ramosissimo tereti striato adpresse piloso-scabrido, foliis opposite sessilibus late linearibus utrinque attenuatis triplinerviis vix denticulatis utrinque piloso-scabris, pedicellis ad apices ramulorum 1–3 subcorymbosis, involucri squamis 3-seriatis disco parum brevioribus, exterioribus oblongo-lanceolatis acutis scabris ciliatis apice foliaceis patulis, paleis longe acuminatis, ligulis oblongis bidentatis, achæniis villosis 2–3-aristatis et pluri-squamellatis.

HAB. In bushy places near San Domingos, Province of Goyaz. May, 1840.

Suffrutex 2–3-pedalis. Folia 2–4 poll. longa, 2–3 lin. lata. Involucrum 4 lin. longum. Capitulum flavum.

SECT. III. HARPALIZIA.

Involucrum 3–4-seriale, squamis imbricatis ovatis vel oblongis acutis vel obtusis inappendiculatis. Achænia radii pappo coroniformi dentato superata, disci pappo 2–3-aristato et squamellato gerentia.

3291. V. *oblongifolia*; caule erecto simplici aut ad apicem ramoso tereti striato hirto, foliis oppositis brevissime petiolatis oblongis acutiusculis triplinerviis integris utrinque piloso-scabris, pedicellis terminalibus solitariis valde elongatis, involucri campanulati squamis oblongo-lanceolatis scabris ciliolatis imbricatis, paleis linearibus acuminatis, achæniis glabris, radii pappo coroniformi dentato superatis, disci 3 aristatis squamellis intermediis paucis minimis.

HAB. Dry upland Campos, Mission of Duro, Province of Goyaz. Oct. 1839.

Herba perennis. Radix lignosa. Caules plures, sub-bipedales. Folia summa alterna, 2–2½ poll. longa, 8–10 lin. lata. Involucrum 5 lin. longum. Capitulum flavum, ligulis oblongis acutis integris 9 lin. longis.

The setæ of the pappus of the ligulate florets are very small, and the intermediate squamellæ are nearly obsolete.

3290. V. *nervosa*; caule erecto simplici vel versus apicem ramoso tereti striato hirto, foliis oppositis subsessilibus elongato-lanceolato-linearibus utrinque attenuatis triplinerviis integris utrinque piloso-scabris, pedicellis terminalibus solitariis vel ternis valde elongatis, involucri campanulati squamis oblongo-lanceolatis acuminatis scabris ciliolatis, paleis linearibus acuminatis, achæniis glabris pappo coroniformi subdentato superatis, disci 2-aristatis, aristis elongatis, squamellis intermediis paucis laceratis.

HAB. Bushy places in upland Campos near Villa de Natividade, Province of Goyaz. Jan. 1840.

Herba perennis. Radix lignosa, caules plures ex eadem radice, sesquipedales et ultra. Folia semper opposita, 3–5 poll. longa, 4½–6 lin. lata, rigida, scaberrima. Pedicelli 6–12 poll. longi. Involucrum 6 lin. longum. Capitulum flavum, ligulis lineari-oblongis obscure bidentatis, 9 lin. longis.

This species is distinguished from the last by its very long, narrow leaves, acuminated involucral scales, but principally by the aristæ of the pappus of the disk, which are much longer in proportion to the length of the squamellæ than in the preceding.

4233. V. *robusta*; caule erecto ad apicem ramoso tereti striato villosiusculo, foliis alternis sessilibus oblongis acutiusculis triplinerviis margine revolutis serrato-dentatis supra scabris nitidis subtus piloso-pubescentibus, capitulis ad apices ramulorum

1–2 breviter pedicellatis, involucri hemispherici squamis ovalibus obtusis pilosis ciliatis imbricatis, receptaculo convexo, paleis obtusissimis, achæniis radii linearibus triangularibus pilosis pappo coroniformi dentato superatis, disci oblongis pilosis 2-aristatis, squamellis intermediis laceratis subæqualibus.

HAB. Dry upland Campos near San Domingos, Province of Goyaz. May, 1840.

Herba perennis. Caules plures ex eadem radice, 2–3-pedales. Folia 1½–3 poll. longa, 8–10 lin. lata, subtus pallida, reticulata, venis prominulis. Involucrum 4 lin. longum. Capitulum flavum, ligulis obscure 3-dentatis, 6 lin. longis.

SECT. IV. HARPALIUM.

Involucrum 3–4-seriale, squamis laxe imbricatis subæqualibus lineari-lanceolatis. Achænia radii calva, disci pappo 2–3-aristato et squamellato superata.

3288. V. *grandiflora*; caule erecto simplici striato hispido, foliis alternis sessilibus oblongo-lanceolatis utrinque attenuatis apice acutis aut subacuminatis ultra medium serrato-dentatis tripli- vel subquintupli-nerviis supra sparse adpresseque pilosiusculis subtus piloso-pubescentibus, pedicellis 1–3 terminalibus, involucri squamis 3-seriatis lineari-lanceolatis acuminatis extus pilosiusculis ciliatis, paleis membranaceis lanceolatis acuminatis, achæniis glabriusculis, radii linearibus abortivis calvis, disci oblongis compressis acute 4-angulatis 2-aristatis, squamellis intermediis denticulatis.

Leighia grandiflora, *Gardn. Sert. Plant. t.* 54–55. *Walp. Repert. Bot. Syst.* 6. *p.* 165.

HAB. Dry hills near the Mission of Duro, Province of Goyaz. Oct. 1839.

This plant was first published by me in the Sertum Plantarum, as a species of *Leighia*. The achænia of the ligulate florets, which are destitute of pappus, refer it to *Harpalium*, in which section I now place it with an amended specific character.

4234. V. *bracteata*; caule erecto apicem versus ramoso tereti striato glabriusculo, foliis alternis sessilibus elongato-linearibus utrinque attenuatis triplinerviis margine distanter subdenticulatis utrinque piloso-pubescentibus, capitulis ad apices ramorum subsessilibus bracteatis, involucri hemispherici squamis pluriseriatis laxe imbricatis puberulis disco brevioribus, exterioribus lanceolato-linearibus acuminatis, intimis lineari-oblongis acutis, receptaculo conico, paleis oblongis obtusiusculis, achæniis radii linearibus glabris abortivis calvis, disci oblongis compressis pilosis 2-aristatis, squamellis intermediis plurimis acutis.

Hab. Dry upland Campos between Arrayas and San Domingos, Province of Goyaz. May, 1840.

Herba perennis, 2–3-pedalis. Folia 3–4½ poll. longa, 2 lin. lata. Involucrum 7 lin. longum. Capitulum flavum, ligulis lineari-oblongis obscure 2–3-dentatis, 10 lin. longis.

Bidens, *Linn.*

4257. B. (*Psilocarpæa*) *venosa*; glaberrima, caule tereti striato, foliis oppositis sessilibus oblongis aut superioribus cuneato-lanceolatis tripli- vel subquintupli-nerviis grosse serratis, capitulis terminalibus subcorymbosis breviter pedicellatis discoideis, involucri squamis exterioribus parvis lineari-lanceolatis acuminatis patulis, interioribus lineari-oblongis acutis adpressis disco brevioribus, achæniis glabris linearibus compressis 4-angulatis striatis 2-aristatis ad apicem tantum glochidiatis.

Hab. Dry upland Campos between Arrayas and San Domingos, Province of Goyaz. May, 1840.

Herba perennis. Caules erecti, ad apicem ramosi. Folia 2½–3 poll. longa, 9–12 lin. lata, parallele venosa, venis utrinque prominulis. Involucrum 6 lin. longum. Achænia 6 lin. longa.

4254. B. (*Psilocarpæa*) *patula*; caule fruticoso scandente tereti striato, ramulis teretibus glabris, foliis oppositis petiolatis ovato-lanceolatis acuminatis basi rotundatis in petiolum cuneato-attenuatis serrato-dentatis, acumine integris, supra glabris subtus piloso-pubescentibus penniveniis, capitulis pedicellatis ad apices ramulorum corymbosis in paniculam magnam dispositis radiatis (?), involucri squamis subæqualibus linearibus acuminatis patulis, achæniis linearibus compressis striatis ad angulos laterales dense piloso-ciliatis bi-aristatis, aristis demum divaricatis glochidiatis.

HAB. Bushy places near San Bernardo, Province of Goyaz. May, 1840.

Frutex scandens. Folia 4–5 poll. longa, 18–22 lin. lata: petioli pollicem longi. Involucrum 6 lin. longum. Achænia 6 lin. longa.

LIPOCHÆTA, *DC.*

3847 et 4235. L. *Goyazensis*; caule fruticuloso tereti scabro; foliis longe petiolatis late ovatis acutis basi subcordatis in petiolum subcuneato-attenuatis vel ovato-lanceolatis utrinque attenuatis triplinerviis serrato-dentatis supra scabriusculis subtus pubescenti-tomentosis, pedicellis terminalibus hispidis ternis capitulo demum quadruplo longioribus, involucri squamis 2-seriatis, exterioribus oblongis obtusis foliaceis scabris disco subæquantibus, intimis lanceolatis acutis membranaceis, ligulis 10 oblongis, paleis oblongo-lanceolatis acuminatis, achæniis radii triquetris subalatis 3-aristatis et pauci-squamellatis, squamellis apice inciso-pilosis.

HAB. Near Villa de Arrayas (3847), and near San Domingos (4235), Province of Goyaz. March–May, 1840.

Suffrutex ramosus. Folia opposita, 4–6 poll. longa, 2–2½ poll. lata: petioli 12–15 lin. longi. Pedicelli 9–12 lin. longi. Capitulum flavum, floribus radii fœmineis.

In n. 4235 the leaves are much narrower than in the other number, but the plants are otherwise the same.

VERBESINA, *Less.*

875. V. *lancifolia*; caule suffruticoso ramoso, ramis teretibus striatis pubescentibus, foliis alternis decurrentibus lanceolatis acuminatis basi longe cuneato-angustatis subdenticulatis supra scabriusculis subtus pubescenti-tomentosis, capitulis 10–14 corymbosis, involucri squamis oblongo-lanceolatis acutis ciliolatis, ligulis 3 circiter ovalibus 3-dentatis, achæniis cuneato-linearibus vix alatis margine ciliolatis bi-aristatis.

HAB. Bushy places near the city of Bahia. Sept. 1838.

Suffrutex ramosus, 3-pedalis. Folia 2 poll. longa, 7 lin. lata, supra viridia, subtus fulva. Capitula ovata, 3 lin. longa. Ligulæ disco paulo longiores, albæ.

Near V. *microptera*, DC.

4927. V. *floribunda*; caule suffruticoso, ramis angulato-striatis velutino-tomentosis, foliis alternis petiolatis oblongo-lanceolatis utrinque acuminatis margine tenuiter revolutis distanter denticulatis penniveniis supra scabriusculis subtus fulvo-pubescentibus, capitulis plurimis pedicellatis corymboso-paniculatis, involucri squamis oblongo-lanceolatis acuminatis patulis, ligulis nullis, paleis lanceolatis acuminatis, achæniis oblongo-cuneatis compressis late alatis, alis lacerato-ciliolatis biaristatis.

HAB. Near Villa do Principe, Province of Minas Geraës. Aug. 1840.

Suffrutex ramosus, 6–12-pedalis. Folia 10–12 poll. longa, 2–3 poll. lata. Achænia 2 lin. longa, 3 lin. lata, alis albidis.

This, as a species, will range along with V. *arborea*, H. B. K.

SPILANTHES, *Jacq.*

4922. S. (*Acmella*) *ecliptoides*; caule basi repente adscendente hirsuto, foliis oppositis petiolatis lanceolatis acutis basi cuneato-attenuatis triplinerviis distanter serrato-dentatis utrinque subhirsutis, pedicellis terminalibus piloso-hispidis gracilibus, capitulis ovatis obtusis radiatis, involucri squamis lineari-lanceolatis acutis 3-nerviis piloso-hispidis, interioribus basi membranaceis complicatis, ligulis late oblongis 3-dentatis involucro paulo longioribus, achæniis glabris calvis.

HAB. Near Perna de Paó, on the confines of the Province of Minas Geraës with that of Rio de Janeiro. Oct. 1840.

Herba pedalis. Folia 1½–2 poll. longa, 6–8 lin. lata. Pedicelli 2 poll. longi. Involucrum 2 lin. longum. Flores lutei. Ligulæ basi glabræ. Corollæ disci basi pilosæ.

Near S. *doronicoides*, DC., with which it agrees in habit, but differs in having serrated acute leaves, and glabrous achænia destitute of aristæ.

2223. S. (*Acmella*) *melampodioides*; caule basi repente adscendente glabro apice pilosiusculo, foliis oppositis petiolatis late ovatis obtusis repando-dentatis trinerviis utrinque pilosiusculis, petiolis subciliatis, pedicellis terminalibus demum alaribus folio brevioribus, capitulis subglobosis radiatis, involucri squamis oblongo-lanceolatis obtusis pilosiusculis ciliatis, ligulis circiter 8 profunde bilobis lobis obtusis involucro brevioribus, achæniis oblongis compressis margine ciliatis, radii calvis, disci bi-aristatis.

Hab. Moist places near the city of Oeiras, Province of Piauhy. April, 1839.

Herba subpedalis. Folia 3½ poll. longa, 1½–2 poll. lata, basi truncata aut subcordata, subtus pallida: petioli pollicem longi. Involucrum 3½ lin. longum. Flores pallide lutei. Ligulæ et corollæ disci basi glabræ.

This ranges along with S. *Beccabunga*, DC.

3866. S. (*Acmella*) *Arrayana*; caule erecto ramoso sparse subhirtello, foliis oppositis petiolatis ovato-lanceolatis obtuse acuminatis basi in petiolum cuneato-attenuatis grosse inciso-dentatis triplinerviis supra glabriusculis subtus ad nervos pilosiusculis, petiolis subciliatis, pedicellis terminalibus demum alaribus folio paulo longioribus, capitulis ovato-conicis radiatis, involucri squamis exterioribus circiter 5 oblongo-lanceolatis obtusis eciliatis, ligulis ovalibus emarginatis involucro paulo longioribus, achæniis vix ciliolatis calvis.

Hab. Near Villa de Arrayas, Province of Goyaz. March, 1840.

Herba subbipedalis. Folia 3 poll. longa, 12–15 lin. lata. Involucrum 1½ lin. longum. Flores lutei. Ligulæ basi pilosæ. Corollæ disci basi glabræ.

Near S. *Lundii*, DC., from which it is distinguished by its deeply inciso-dentate leaves, and nearly glabrous achænia destitute of aristæ.

Glossogyne, *Cass.*

4253. G. *Brasiliensis*; caule demisso lignoso ramoso, ramis confertis dense foliosis, foliis ternatim biternatimve sectis, segmentis acerosis compressis striatis, pedunculis terminalibus solitariis valde elongatis ad medium 1-squamosis, involucri squamis 2-seriatis, exterioribus lineari-lanceolatis intimis plus duplo brevioribus, intimis oblongo-lanceolatis margine membranaceis ciliolatis, paleis oblongis obtusis, achæniis linearibus exalatis margine ciliolatis biaristatis, aristis tenuibus scabris.

HAB. Dry upland Campos near Nossa Senhora d'Abbadia, Province of Goyaz. May, 1840.

Herba basi fruticulosa, subpedalis. Folia ad ramos confertissima, 1½ poll. longa, segmentis angustissimis acutis: petioli basi dilatati. Pedunculi 6–8 poll. longi, striati. Involucrum campanulatum, vix 3 lin. longum. Ligulæ ignotæ. Corollæ disci tubulosæ, 5-dentatæ, basi pilosæ. Styli rami in appendicem teretem elongatam hispidam producti. Achænia 2 lin. longa, aristis parum divaricatis scabris nec retrorsum setosis.

I had at first referred this plant to the genus *Isostigma*, but now find that it is more nearly related to *Glossogyne*. From the former it differs in habit, in the wingless achænia, and scabrous, not glabrous, aristæ; while with the latter it agrees in habit, and in having wingless achænia, and only departs in the aristæ being simply scabrous, not retrorsely setose.

ENHYDRA, *DC.*

5522. E. *Anagallis*; caule hispido, foliis breviter petiolatis lineari-oblongis obtusis basi biauriculatis serrato-dentatis glabriusculis membranaceis, capitulis ad axillas solitariis sessilibus, involucri squamis exterioribus late ovatis obtusis parallele nervosis subhispidis, paleis radii obovatis 3-dentatis, dentibus obtusis pilosis.

HAB. In ditches at the Laranjeiras, near Rio de Janeiro. Jan. 1841.

Herba perennis. Caules basi ad nodos radicantes demum adscendentes, ramosi. Folia 2½ poll. longa, 6 lin. lata. Involucri squamæ exteriores 7½ lin. longæ, 6 lin. latæ.

From the very short and imperfect characters which are given of the species of this curious genus in De Candolle's Prodromus, it is quite possible that the three species which I here consider as

new, may belong to already described ones. This point, however, can only be determined by those who have access to authentic specimens. The present species seems more nearly related to the Asiatic than the American section, and but for its much broader leaves agrees in many respects with E. *paludosa*, DC.

1976. E. *rivularis*; caule hispido, foliis breviter petiolatis longe lineari-lanceolatis apicem versus attenuatis basi obtusis vix auriculatis distanter subdenticulatis supra scabridis subtus ad nervos piloso-pubescentibus membranaceis, capitulis ad axillas solitariis sessilibus, involucri squamis exterioribus late ovatis acuminatis reticulatis glabriusculis, paleis radii obovatis 4–5-dentatis, dentibus acuminatis pilosis.

HAB. In slow running streams near Barra do Jardim, Province of Ceara. Dec. 1838.

Herba perennis. Caules basi ad nodos radicantes, demum adscendentes, bipedales, ramosi. Folia 4 poll. longa, 6–9 lin. lata. Involucri squamæ exteriores 5 lin. longæ, 4½ lin. latæ.

1053. E. *integrifolia*; caule glabro, foliis sessilibus lineari-lanceolatis acuminatis basi subauriculatis margine revolutis integerrimis supra scabridis subtus pubescentibus membranaceis, capitulis ad axillas solitariis sessilibus, involucri squamis exterioribus rotundatis obtusis reticulatis glabris, paleis radii inæqualiter 3-dentatis acutis pilosis.

HAB. In saline marshes in the Island of Itamarica, Province of Pernambuco. Dec. 1837.

Herba perennis. Caules basi ad nodos radicantes, demum adscendentes, ad apicem ramosi, bipedales. Folia 2½–3 poll. longa, 3–4 lin. lata. Involucri squamæ exteriores 3 lin. longæ, 3 lin. circiter latæ.

The stems and leaves of this apparently very distinct species become black when dry.

POROPHYLLUM, *Vaill.*

4259. P. (*Euporophyllum*) *angustissimum*; suffruticosum glabrum dichotomo-ramosum, foliis alternis linearibus integerrimis acutis eglandulosis, involucri cylindrici squamis linearibus acutis, achæniis scabris.

Hab. Dry upland Campos between Arrayas and San Domingos, Province of Goyaz. May, 1840.

Suffrutex 3-pedalis. Folia 1½–2 poll. longa, angustissima. Pedicelli brevissimi, ad apicem incrassati, striati. Involucrum cylindricum, 9 lin. longum, squamis 3-nerviis, margine membranaceis, 1½ lin. latis, achænium 3½ lin. longum.

This comes very near P. *lineare*, DC., of which I possess numerous specimens from different parts of Brazil, but may be distinguished from it by its numerous leaves, shorter pedicels, narrow cylindrical, not oblong, capitula, involucral scales a third longer, its very much narrower, shorter achænia, and longer and less scabrous pappus. The involucrum is almost that of P. *prenanthoides*, DC., but shorter; while the leaves are like those of P. *lineare*, only narrower.

AMPHICALEA. *Genus Novum.*

Char. Gen. *Capitulum* 4-florum homogamum. *Involucrum* cylindricum, squamis pluriserialibus adpresse imbricatis siccis, exterioribus ovatis obtusis, intimis oblongis obtusis. *Receptaculum* parvum, conicum, nudum. *Corollæ* tubulosæ, 5-fidæ. *Antheræ* ecaudatæ, exsertæ. *Styli rami* apice truncati, subcapitati, hispiduli. *Achænia* lineari-oblonga, tetragona, resinoso-punctata, villosa. *Pappus* uniserialis, paleis circiter 12 scariosis enerviis lineari-lanceolatis acuminatis ad apicem lacerato-pilosis.—Herbæ *aut* frutices *Brazilienses*; caulibus *erectis ad apicem corymboso-paniculatis glabris vel velutino-tomentosis*; foliis *alternis vel oppositis* (?), *sessilibus, elliptico-oblongis aut subrotundatis, integris aut crenato-dentatis, subtriplinerviis, reticulatis*; capitulis *pedicellatis, ad apices ramulorum ternis, in corymbum amplum compositum dispositis*; floribus *luteis.*

This genus is established for the reception of two plants, one of which was collected by myself in Brazil, the other is *Calea*? *gentianoides*, DC. The latter, indeed, I have not seen, but, judging from De Candolle's description, I have no hesitation in considering it a congener of my plant. The latter has very much the habit of *Lemmatium*, DC., and of some species of

Calea, but both the species differ not only from them, but from the division to which they belong, in having a naked receptacle. This character, together with the want of ligulate florets, refers them to the subdivision *Euhelenieæ*, but in it I can meet with no genus to which they are naturally allied. They seem to constitute a connexion between the subdivisions *Euhelenieæ* and *Eugalinsogeæ*. De Candolle accounts for the absence of paleæ in *Calea? gentianoides*, by supposing that the central florets are deficient, the few which exist being marginal ones; and such most likely is the case. I retain the sectional name given by De Candolle to his plant for that of the genus.

4925. A. *fruticosa*; fruticosa, caulibus angulato-sulcatis fulvo-velutino-tomentellis ad apicem ramosis, foliis alternis sessilibus subrotundatis basi subcordatis crenato-dentatis penniveniis vel junioribus subtriplinerviis utrinque scabris subtus puberulis et valde reticulatis.

Hab. Open bushy places on the Serra das Araras, on the confines of the Province of Minas Geraës with that of Goyaz. June, 1840.

Frutex 3-pedalis. Caules plures ex eadem radice. Folia 2½–3 poll. longa, 2–2½ poll. lata, subtus pallida. Capitula breviter pedicellata, subcylindrica. Involucrum 6 lin. longum, glabriusculum, stramineum. Achænia 2½ lin. longa, squamellis 1½ lin. longis.

A. gentianoides, *Gardn.*—Calea? gentianoides, *DC. Prodr. vol.* 5. *p.* 671.

De Candolle does not state whether the leaves are opposite or alternate in this plant.

Meyeria, *DC.*

4244. M. *teucriifolia*; fruticosa ramosa, ramis teretibus striatis hirtellis, foliis breviter petiolatis ovato-lanceolatis acutis basi subcuneatis triplinerviis grosse crenato-serratis, serraturis utrinque 3–4 utrinque hirtellis, capitulis terminalibus breviter pedicellatis solitariis, involucri squamis exterioribus obtusis foliaceis hirtellis brevibus, intimis oblongis obtusis glabris,

paleis lineari-lanceolatis acuminatis, achæniis scabriusculis, pappi paleis 15 circiter spathulato-oblongis obtusis achænio triplo brevioribus.

Hab. Dry, sandy, bushy Campos between San Domingos and Capella da Posse, Province of Goyaz. May, 1840.

Frutex 2–3-pedalis. Folia 6–8 lin. longa, 3–4 lin. lata. Involucrum campanulatum, squamis interioribus 5–6 lin. longis striatis margine scariosis. Corollæ ignotæ. Achænia 2½ lin. longa.

2904. M. *microphylla*; fruticosa ramosa, ramis teretibus pubescentibus, foliis parvis petiolatis ovatis acutis triplinerviis margine revolutis crenato-dentatis, dentibus utrinque 2–3 supra scabridis subtus hirtellis, capitulis terminalibus breviter pedicellatis solitariis, involucri squamis exterioribus ovato-rotundatis subfoliaceis pubescentibus, intimis ovalibus obtusis glabris, paleis oblongis acutis subtridentatis, achæniis acute quadrangulatis glabris, pappi paleis 12 circiter ellipticis obtusis achænio multo brevioribus.

Hab. On the banks of the Rio Preto, Province of Pernambuco. Sept. 1839.

Frutex 2–3-pedalis. Folia 3–3½ lin. longa, 1½–2 lin. lata. Involucrum ovato-campanulatum, squamis interioribus 3½ lin. longis striatis margine scariosis. Ligulæ oblongæ, glabræ, obtuse 3-dentatæ. Corollæ disci tubulosæ, profunde 5-fidæ, glabræ. Styli rami exappendiculati. Achænia 1½ lin. longa.

With the last this species agrees exactly in habit, but is distinguished by its smaller leaves, smaller capitula, and by the different paleæ, achænia, and pappus.

3855. M. *hypericifolia*; fruticulosa ramosa, ramis teretibus striatis puberulis, foliis vix petiolatis oblongo-linearibus utrinque obtusiusculis triplinerviis integris vel subdentatis utrinque glabriusculis subtus impresso-punctatis, capitulis terminalibus breviter pedicellatis solitariis, involucri squamis exterioribus ovato-oblongis obtusis subfoliaceis basi ciliolatis, intimis oblongis obtusis glabris, paleis anguste linearibus acuminatis, achæniis obscure quadrangulatis glabris, pappi paleis 12 circiter parvis subrotundis.

HAB. Bushy, gravelly places near Villa de Natividade, Province of Goyaz. Feb. 1840.

Suffrutex bipedalis, ramosissimus. Folia 8–10½ lin. longa, 2–3 lin. lata, subpuberula. Involucrum ovatum, squamis interioribus 3 lin. longis. Ligulæ oblongæ, obscure bidentatæ, glabræ. Corollæ disci tubulosæ, profunde 5-fidæ, glabræ. Styli rami truncati. Achænia 1½ lin. longa.

3282. M. *angustifolia*; suffruticosa ramosa, ramis teretibus striatis puberulis, foliis sessilibus longe linearibus obtusis uninerviis margine revolutis integris, capitulis pedicellatis solitariis, involucri squamis exterioribus ovatis obtusis parum foliaceis glabris, interioribus oblongo-lanceolatis obtusis glabris, paleis anguste lineari-lanceolatis acuminatis, achæniis glabris, pappi paleis 12 circiter minutis rotundatis.

HAB. Bushy places near Villa de Natividade, Province of Goyaz. April, 1840.

Suffrutex 2–3-pedalis. Folia 1½–2 poll. longa, lineam circiter lata, subtus punctata. Involucrum ovatum, squamis interioribus oblongis striatis, 3 lin. longis. Ligulæ ovatæ, obscure 2-dentatæ, glabræ. Corollæ disci tubulosæ, 5-fidæ, glabræ. Styli rami truncati, subcapitati. Achænia 1½ lin. longa.

This species is well distinguished by its long narrow leaves, narrow capitula, and very minute scales of the pappus.

2903 et 4242. M. *Candolleana*; suffruticosa ramosa, ramis teretibus striatis scabris, foliis breve petiolatis oblongis vel ovato-oblongis obtusis basi cuneatis trinerviis margine revolutis serrato-dentatis utrinque scabridis subtus ad nervos pilosiusculis, capitulis subcorymbosis paucis longe pedicellatis, involucri squamis exterioribus parvis ovatis obtusis ciliolatis scabriusculis membranaceis, intimis oblongis obtusis glabris, paleis lanceolatis acuminatis subtridentatis, achæniis glabris, pappi paleis 12 circiter minutis subrotundatis.

HAB. In marshy Campos on the Serra da Batalha, district of the Rio Preto, Province of Pernambuco, Sept. 1839 (2903), and in similar situations near San Domingos, Province of Goyaz, May, 1840 (4242).

Suffrutex 2½-pedalis. Folia 1½–2 poll. longa, 6–9 lin. lata. Involucrum ovato-campanulatum, squamis interioribus oblongis obtusis striatis 4½ lin. longis. Ligulæ obovatæ, obscure 4-dentatæ, glabræ. Corollæ disci tubulosæ, 5-dentatæ, tubo pilosiusculo. Styli rami exappendiculati. Achænia 1½ lin. longa.

3856. M. *elongata*; suffruticosa ramosa, ramis striato-subangulatis scabris elongatis, foliis subsessilibus lineari-oblongis obtusis trinerviis, nervis utrinque prominulis, subsinuato-crenatis utrinque scabris subtus punctatis, margine revolutis capitulis subcorymbosis paucis pedicellatis, involucri squamis exterioribus parvis ovato-rotundatis margine scariosis scabris, intimis oblongis obtusis scabriusculis, paleis lineari-lanceolatis acuminatis, achæniis glabris, pappi paleis 15 circiter parvis subrotundatis subdentatis.

Hab. In boggy places on the Serra de Natividade, Province of Goyaz. Jan. 1840.

Suffrutex 3–4-pedalis. Folia 1½–2 poll. longa, 3–5 lin. lata. Involucrum ovato-campanulatum, squamis interioribus striatis ciliolatis, 4½ lin. longis. Ligulæ obovato-oblongæ, obtuse 3-dentatæ, glabræ. Corollæ disci tubulosæ, 5-dentatæ, glabræ, styli rami exappendiculati. Achænia 1½ lin. longa.

Calea, *R. Br.*

Sect. Discocalea, *DC.*

4247. C. *subrotunda*; fruticosa, ramis oppositis villoso-tomentosis, foliis petiolatis late ovato-subrotundis obtusis basi cordatis triplinerviis margine revolutis obtuse crenatis supra hirtellis scabriusculis subtus villoso-tomentosis, corymbis terminalibus et axillaribus confertis 5–8-cephalis, capitulis ovatis discoideis 6–8-floris, involucri squamis membranaceis, exterioribus ovato-rotundatis obtuse mucronatis ciliatis, intimis ovato-oblongis obtusis glabris, paleis ovato-lanceolatis 3-dentatis, dente medio lato obtusissimo lacerato, lateralibus minoribus acutis, achæniis hispidis, pappi paleis linearibus acuminatis serrulatis.

Hab. Dry bushy places near San Pedro, Province of Goyaz. May, 1840.

Frutex 2–3-pedalis. Folia 1½–2 poll. longa, 18–21 lin. lata. Involucrum 3½ lin. longum. Corollæ tubulosæ, profunde 5-fidæ, luteæ. Styli rami exappendiculati. Paleæ pappi 20, achænio duplo longiores.

3853. C. *lantanoides*; caule suffruticoso erecto tereti striato pubescente vix ramoso, foliis oppositis petiolatis ovatis obtusis basi rotundatis triplinerviis margine revolutis crenato-dentatis supra scabris subtus pubescenti-tomentosis, pedunculis axillaribus terminalibusque ad apicem subfoliaceis folio brevioribus, capitulis pedicellatis umbellatis ovato-oblongis 7-floris, involucri squamis exterioribus ovatis acutis, intimis ovato-oblongis obtusis, paleis ovato-lanceolatis sub-3-dentatis, dentibus acutis, achæniis hispidis, pappi paleis linearibus acuminatis serrulatis.

HAB. Dry upland Campos near Villa de Arrayas, Province of Goyaz. March, 1840.

Suffrutex 2–3-pedalis. Folia 3–3½ poll. longa, 1½–2 poll. lata. Involucrum 3½ lin. longum. Receptaculum conicum. Corollæ tubulosæ, profunde 5-fidæ, luteæ, styli rami elongati exappendiculati. Paleæ pappi 20, achænio plus duplo longiores.

This approaches very near to C. *Berteriana*, DC., from which, however, it is distinguished by having tripli- not tri- nerved leaves, which are besides obtuse, not acute, and a conical, not flattish, receptacle.

3292. C. *reticulata*; caule suffruticoso erecto subsulcato pubescente ramoso, foliis terno-verticillatis breve petiolatis obovato-oblongis obtusis basi cuneatis triplinerviis margine revolutis grosse serrato-dentatis supra scabris subtus ad nervos hirtellis, capitulis pedicellatis terminalibus paucis plurifloris discoideis, involucri campanulati squamis exterioribus oblongis obtusis foliaceis hispidis disco æquantibus, intimis oblongis obtusis membranaceis ciliatis, paleis oblongis acutis ad apicem 3–5-dentatis, dentibus acutis lacerato-pilosis, achæniis angulatis pilosiusculis maculatis, pappi paleis linearibus acuminatis serrulatis.

HAB. Dry upland Campos at the Mission of Duro, Province of Goyaz. Oct. 1839.

Suffrutex bipedalis. Folia 4–4½ poll. longa, 1½–2 poll. lata, subtus reticulato-venosa, venis prominulis. Involucrum 5 lin. longum. Receptaculum planiusculum. Corollæ tubulosæ, 5-fidæ, luteæ. Styli rami exappendiculati. Paleæ pappi 20, achænio sesquiplo longiores.

Allied in some respects to C. *ternifolia*, H. B. K., but very different.

SECT. CALEACTE.

4926. C. *eupatorioides*; caule suffruticoso erecto ramoso, ramis 6-angulatis piloso-pubescentibus, foliis oppositis petiolatis ovato-lanceolatis acuminatis basi subcordatis penniveniis serrato-dentatis supra scabris subtus villoso-subtomentosis, capitulis pedicellatis pauci-radiatis ad apices ramulorum umbellatis, involucri squamis exterioribus ovatis obtusis extus pilosiusculis ciliatis, intimis oblongis obtusissimis ciliatis, paleis ovato-lanceolatis acuminatis laceratis, achæniis teretibus glabris minute resinoso-glanduloso-punctatis, pappi paleis anguste linearibus acuminatis serrulatis.

HAB. Bushy places near Morro Velho, Province of Minas Geraës. Sept. 1840.

Suffrutex 6-pedalis. Folia 4 poll. longa, 15–18 lin. lata. Involucrum 5 lin. longum. Receptaculum conicum. Corollæ flavæ, radii ligulatæ, paucæ, anguste, oblongæ, obtusæ, subintegræ, disci tubulosæ, profunde 5-fidæ, styli rami exappendiculati. Paleæ pappi 20, achænio paulo longiores.

This will range along with C. *pinnatifida*, Less.

3859. C. *angustifolia*; caule simplici erecto tereti striato pilosiusculo basi folioso superne longe aphyllo, foliis ternato-verticillatis sessilibus anguste lineari-lanceolatis acuminatis trinerviis distanter subdentatis utrinque pilosiusculis, capitulo terminali solitario radiato, involucri campanulati squamis exterioribus ovato-lanceolatis acutis striatis glabris, intimis ovalibus obtusis striatis glabris, paleis anguste linearibus acuminatis serrulatis.

HAB. Dry upland Campos near the Villa de Arrayas, Province of Goyaz. April, 1840.

Herba perennis. Radix lignosa. Caules plures, sesquipedales. Folia 2½–5 poll. longa, 3 lin. lata, reticulata, venis utrinque prominulis. Involucrum 6 lin. longum. Receptaculum planum. Corollæ flavæ, radii ligulatæ, ligulis 10 circiter late oblongis obtusis 3-dentatis, disci tubulosæ, 5-fidæ. Styli rami exappendiculati. Pappi paleæ 20, achænio paulo longiores.

Near C. *uniflora*, Less.

3289. C. *longifolia*; caule simplici erecto tereti striato hirsuto basi folioso superne longe aphyllo, foliis oppositis sessilibus longe lineari-lanceolatis acuminatis trinerviis supra medium dentatis utrinque villosis, capitulo solitario terminali radiato, involucri campanulati squamis exterioribus ovatis obtusis striatis glabris, intimis oblongis obtusissimis glabris, paleis anguste linearibus acuminatis, achæniis angulatis hispidis, pappi paleis anguste lineari-lanceolatis ciliatis.

HAB. Dry Campos near Natividade, Province of Goyaz. Dec. 1839.

Herba perennis. Radix lignosa. Caules plures, sesquipedales. Folia 4–½ poll. longa, 7½ lin. lata, reticulata, venis utrinque prominulis. Receptaculum planum. Corollæ flavæ, radii ligulatæ, ligulis lineari-oblongis 4-dentatis, disci tubulosæ, 5-fidæ. Styli rami exappendiculati. Pappi paleæ 20, achænio paulo longiores.

This, it must be confessed, comes very near the last species, agreeing with it in habit, but differing in its opposite, not verticillate, leaves, which, besides, though very little longer, are nearly three times broader, and coarsely dentate. The achænia and pappus are also slightly different.

SECT. LEONTOPHTHALMUM.

4926 (bis.) C. *tomentosa*; caule simplici erecto tereti striato villoso basi folioso longe superne aphyllo, foliis oppositis sessilibus ovalibus obtusis basi cuneatis trinerviis grosse crenato-dentatis utrinque cinereo-hirtello-tomentosis, capitulo solitario terminali radiato, involucri campanulati squamis exterioribus late ovatis obtusis foliaceis hirtello-tomentosis, intimis oblongis obtusis membranaceis glabris, paleis anguste linearibus acuminatissimis, achæniis angulatis pilosiusculis, pappi paleis anguste lanceolato-linearibus serrulatis.

HAB. Serra de Curral del Rey, Province of Minas Geräes. Sept. 1840.

Caules plures ex eadem radice, subpedales. Folia 2 poll. longa, 10½–12 lin. lata. Receptaculum planum. Corollæ flavæ radii ligulatæ, ligulis oblongis obscure dentatis, disci tubulosæ, 5-dentatæ. Styli rami exappendiculati. Pappi paleæ 18 circiter, achænio duplo longiores.

Allied to C. *oligocephala*, DC., from which it seems to be distinguished by its unbranched stem, tomentose leaves, and angular, not trigonous, achænia.

ACHYROCLINE, *DC.*

4935. A. *rugosa*; caule suffruticoso cinereo-lanuginoso paniculato-corymboso, foliis sessilibus oblongo-lanceolatis acuminatis basi rotundatis triplinerviis, supra rugosis glabris subtus dense cinereo-araneosis, capitulis ad apices ramorum et ramulorum fasciculato-corymbosis 5-floris, involucri squamis albidis nitidis ovali-oblongis obtusis.

HAB. Dry Campos on the ascent of the Serra da Piedade, Province of Minas Geräes. Sept. 1840.

Suffrutex bipedalis. Folia 1½–2 poll. longa, 6–8 lin. lata. Capitula oblonga, 1½ lin. longa.

Near A. *flaccida*, DC., from all the varieties of which it is distinguished by its very broad rugose leaves, rounded, not attenuated, at the base, and the silvery-white involucre, which is shorter and not so slender as that of the other. I possess a specimen of exactly the same species from Claussen's Minas Geräes Collections.

ERECHTITES, *Rafin.*

3868 et 5527. E. (*Neoceis*) *sulcata*; caule herbaceo erecto ramoso sulcato pilosiusculo, foliis sessilibus amplexicaulibus elongatis oblongo-lanceolatis acutis grosse argute et inæqualiter inciso-dentatis aut profunde pinnatifidis utrinque sparse pilosiusculis,

dentibus calloso-mucronatis, corymbo terminali 3–5-cephalo, involucro late cylindrico bracteolis lineari-subulatis pilosis calyculato.

HAB. Near Villa de Arrayas, Province of Goyaz (3868), and on the ascent of the Corcovado, near Rio de Janeiro (5527).

Herba annua, 2–3-pedalis. Folia caulina 5–8 poll. longa, radicalia majora, subtus pallida. Involucrum 6 lin. longum, squamis linearibus acuminatis pilosiusculis margine scabridis. Capitulum multiflorum, floribus marginalibus multiserialibus fœmineis tenuissimis 5-dentatis, centralibus hermaphroditis 5-dentatis. Receptaculum planum, nudum, minute subpapillosum. Styli rami cono superati. Achænia oblonga, 10-costata, inter costas pilosa. Pappus albidus.

I have been unable to refer this plant, which seems, indeed, a very variable one, to any described species. It appears to come nearest the E. *carduifolia*, DC. In n. 3868 the leaves are coarsely and irregularly inciso-dentate, while in the other number they are deeply pinnatifid: in all other respects they are not different.

5790. E. (*Neoceis*) *Organensis*; caule herbaceo erecto sulcato ramoso pilosiusculo, foliis pinnatisectis, lobis utrinque 3–5 linearibus aut rariter subdentatis supra glabris subtus pilosiusculis, capitulis erectis in paniculam corymbosam laxam dispositis, involucri cylindrici squamis linearibus acutis flores subæquantibus.

HAB. Open places on the Organ Mountains, at an elevation of about 3000 feet. March, 1841.

Herba annua bipedalis. Folia subcoriacea. Involucrum 4½ lin. longum. Achænia oblonga, 10-costata, inter costas hispida. Pappus roseo-lilacinus.

Near E. *valerianæfolia*, DC., from which it is distinguished by its hairy stem, more coriaceous leaves, having much narrower, scarcely denticulate, segments, and considerably smaller capitula. The achænia of E. *valerianæfolia* are longer, and villous rather than hispid, which they are in the present plant.

SENECIO, *Less.*

4938. S. *trixoides*; fruticosus glaberrimus, caule erecto angulato ad apicem paniculato-ramoso folioso, foliis alternis petiolatis lineari-oblongis vel ovato-ellipticis utrinque acutiusculis apice calloso-mucronatis integerrimis reticulato-venosis, venis utrinque prominulis, corymbo composito polycephalo, capitulis erectis discoideis 5-floris, involucro oblongo 5-phyllo calyculato, achæniis hispido-villosis, pappo corollam subæquante.

HAB. In Campos Cobertas near Formigas, Sertao of the Province of Minas Geräes. July, 1840.

Frutex 4–6-pedalis. Folia 1½–2 poll. longa, 4½–12 lin. lata. Pedicelli breves, bracteati, bracteolis lineari-subulatis. Involucri squamæ disco multo breviores, obtusæ, margine scariosæ, ad apicem ciliolatæ 3–3½ lin. longæ. Flosculi lutei. Pappus sordide albidus.

Of the two specimens of my own collecting which I possess, one has the leaves oblong-linear, and somewhat curved towards the base, while in the other, which is not otherwise distinct, they are elliptical-ovate. They are connected, however, by a specimen from Claussen's collection, the leaves of which are of an intermediate shape.

4937. S. *imbricatus*; fruticosus glaberrimus, caule erecto ramoso, ramis teretibus striatis dense foliosis, foliis alternis subsessilibus imbricatis lanceolato- vel elliptico- oblongis utrinque acutiusculis obscure triplinerviis integerrimis coriaceis, corymbo composito compacto polycephalo, capitulis erectis discoideis 5-floris, involucro oblongo 5-phyllo calyculato, achæniis villosis, pappo corollam subæquante.

HAB. In open rocky places in the Diamond District. July, 1840.

Frutex 3-pedalis. Folia 12–15 lin. longa 4½–5 lin. lata, obscure reticulata. Pedicelli 3–5 lin. longi, bracteolati, bracteolis lineari-subulatis. Involucri squamæ disco subæquantes, lineares, acuminatæ, margine scariosæ, apice pilosiusculæ, 6 lin. longæ. Flosculi lutei. Pappus sordide albidus.

3300. S. *Goyazensis*; suffruticosus glaberrimus, caule erecto ramoso, ramis subangulatis elongatis foliosis, foliis alternis sessilibus lanceolatis subacuminatis basi longe attenuatis margine revolutis calloso-serratis penniveniis, corymbo paniculato laxo polycephalo, capitulis erectis discoideis 45-floris, involucro 12-phyllo calyculato, achæniis striatis glabris, pappo corollam æquante.

Hab. Bushy places near Villa de Natividade, Province of Goyaz. Jan., 1840.

Suffrutex 3–5-pedalis. Folia 3 poll. longa, 9 lin. lata. Pedicelli 4–8 lin. longi, apicem versus bracteolati, bracteolis lineari-subulatis. Involucri squamæ disco paulo breviores, lineares, acutæ, margine scariosæ, 4½ lin. longæ. Flosculi lutei. Pappus albidus.

4939. S. *grandis*; suffruticosus, caule erecto ramoso, ramis angulatis subarachnoideis, foliis alternis petiolatis magnis ovato-oblongis acutis basi cordatis penniveniis margine acute denticulatis supra glabriusculis subtus cinereo- araneoso-tomentosis, petiolis alatis, panicula magna puberula, capitulis pedicellatis erectis discoideis 14–floris, involucro 8-phyllo calyculato, achæniis acute 5-angulatis glaberrimis, pappo corollam subæquante.

Hab. Woods near Conceiçao, Province of Minas Geräes. Aug., 1840.

Suffrutex 6–10-pedalis. Folia sesquipedalia, 5–6 poll. lata, membranacea: petioli 5 lin. longi. Panicula sesquipedalia. Pedicelli 3–4 lin. longi, bracteolati, bracteolis lineari-lanceolatis acuminatis. Involucri squamæ disco breviores, lineares, acutæ, 4–6-nervosæ, margine scariosæ, apice pilosæ. Flosculi lutei. Pappus albidus.

This is very distinct from any of the other Brazilian species, and remarkable for the great size of its leaves and panicles. The achænia are so acutely angled as to be almost five-winged, and alternating with them there are five much smaller ones.

4940. S. *dumetorum*; herbaceus, caule erecto simplici sulcato cinereo- araneoso- tomentoso basi folioso, versus apicem longe subaphyllo, foliis alternis sessilibus, basi longe decurrentibus

oblongis obtusis grosse dentatis aut sinuato-denticulatis utrinque dense cinereo- arachnoideo-tomentosis, supremis gradatim minoribus, panicula polycephala glabra, capitulis erectis radiatis 50–55-floris, involucro campanulato 12–13-phyllo calyculato, achæniis hispidulis, pappo corollam æquante.

HAB. Elevated rocky places on a mountain range to the north of the Diamond district. July, 1840.

Herba perennis, 4–8-pedalis. Folia 3–6 poll. longa, 1–2½ poll. lata. Pedicelli 3–6 lin. longi bracteolati, bracteolis parvis setaceis. Involucri squamæ lanceolato-oblongæ, acutæ, margine late scariosæ ciliolatæ. Flosculi lutei, radii 8, ligulati. Pappus sordide albidus.

4941. S. *camporum*; herbaceus, caule crasso erecto simplici sulcato araneoso folioso, foliis alternis sessilibus basi auriculatis lineari-oblongis elongatis apice obtusis mucronatis grosse sinuato-dentatis fere pinnatifidis, dentibus latis mucronatis, supra glabriusculis subtus lanuginoso-tomentosis cinereis, corymbo composito polycephalo, capitulis pedicellatis confertis erectis radiatis 9–10-floris, ligulis 1–2, involucro 8-phyllo calyculato, achæniis glabris, pappo corollam æquante.

HAB. Upland Campos on an elevated mountain range to the north of the Diamond District. July, 1840.

Herba perennis, bipedalis. Folia 6 poll. longa, 1½ poll. lata. Pedicelli 3 lin. longi, tomentosi, bracteolati, bracteolis linearibus obtusis. Involucri squamæ disco multo breviores, lineari-oblongæ, acutiusculæ, glabriusculæ, margine scariosæ, apice pilosiusculæ, 3 lin. longæ. Flosculi lutei. Pappus albidus.

This seems to come near S. *adamantinus*, Bong., to the original description and figure of which I regret that I have not access, and I should not be surprised if it proves to be the same. In my specimen, however, the leaves are certainly not glandular on the upper surface, nor are the capitula racemose, but they form a very large compound corymb.

The following is a list of those species of *Compositæ*, belonging to the sub-tribe *Senecionideæ* in my Brazilian Collections, which have already been described :—

6050	Elvira *biflora*, DC.
3273	Ichthothere *latifolia*, Gardn. *Latreillea latifolia*, Benth.
3277	Clibadium *rotundifolium*, DC.
793, 3845, 6052	Scolospermum *Fougerauxiæ*, DC.
1051	Melampodium *divaricatum*, DC.
869, 1345, 3842	Acanthospermum *hispidum*, DC.
3297	——————— *hirsutum*, DC.
2902	——————— *xanthoides*, *var*. *a*. *obtusifolium*, DC.
524	Xanthium *macrocarpum*, DC.
6056	Ambrosia *microcephala*, DC.
5526	———— *artemesiæfolia*, Linn.
4921	———— *polystachya*, DC.
3857	Wedelia *Vauthieri*, DC.
4932	——— *scandens*, Gardn.
6054	——— *radiosa*, Ker.
879, 1050	——— *paludosa*, *β*. *vialis*, DC.
605	Ogieria *triplinervis*, *var*. *γ*. *Portoricensis*, DC.
1969, 1970, 1971, 6055	Wulfia *stenoglossa*, DC.
1348	——— *platyglossa*, DC.
501, 3851	Bidens *leucantha*, Willd.
878, 1742, 2222, 4256	——— *bipinnata*, Linn.
508	Verbesina *helianthoides*, H. B. K.
2225, 3298, 5520	Spilanthes *Lundii*, DC.
2224	————— *oleracea*, *β*. *fusca*, DC.
3299	————— *urens*, Jacq.
4252	————— ——— *β*. *hispidula*, DC.
1746	————— *exasperata*, Jacq.
1743, 2023, 2423	Chrysanthellum *Swartzii*, Cass.
505, 1975	Tagetes *glandulifera*, Schr.
3867	Porophyllum *ellipticum*, Cass.
4260	—————— *prenanthoides*, DC.
4258, 4920	—————— *lineare*, DC.
4931	Meyeria *myrtifolia*, DC.
5524	Calea *pinnatifida*, Less.
4934	Achyrocline *saturejoides*, DC.
4261, 4933	—————— *vauthieriana*, DC.
513, 4262, 5789	—————— *flaccida*, DC.

4936	Gnaphalium Gaudichaudianum, DC.
5518	———— *spicatum, var. β. interrupta*, DC.
1747	———— *Americanum*, Mill.
5528	Erechtites *valerianæfolia*, DC.
1055, 6057	Emilia souchifolia, DC.
4942	Senecio Brasiliensis, Less.
504	———— *ellipticus*, DC.

Kandy, Ceylon,
6th Oct., 1847.

Prodromus Monographiæ Ficuum; *scripsit* F. A. G. Miquel, Botanices Professor Amstelodamensis.

(*Continued from page* 236.)

62. *Ficus Toka Forsk. Arab. p.* 219, foliis distichis scabris ovato-lanceolatis. *Arabia.*

63. *Ficus aspera Forst. Pl. escul. Aust. p.* 37. *Thunb. diss.* n. 4. Ramulis petiolis foliisque junioribus subtus pubescentibus sensim scabrescentibus et glabrioribus, his breviter petiolatis membranaceis supra asperulis oblongis acutis vel subacuminatis basi obtusis vel leviter excisis inæqualibus, junioribus versus apicem præsertim extrorsum denticulatis sensim integerrimis, trinerviis costulisque utrinque 4–5, receptaculis axillaribus solitariis (an semper?) pedunculatis globoso-urceolatis tomentoso-pubescentibus basi pedunculoque sparse bracteatis, apice bracteis linearibus erectis numerosis connatis.

Hab. insula *Tanna* (Forst.), in sylvis umbrosis ad *fl. Brisbane,* 15–25 pedum alta, (Cunningh.!), in parte austr. *Coloniæ* (an Nov. Holl.?—Hb. Hook.)

Folia rigida, subtus pallida, ætate subscrobiculata, 8–16 cent. longa, 3–6 lata. *Pedunculi* petiolum æquantes vel superantes.

Forma pube molliore, receptaculis rubiginoso-villosis—*Ficus Muntia Link Enum. II.* p. 450. (*Cf. Kth. in Ind. Sem. Hort. berol.* 1846. p. 21.)

Hb. in *Nova Holl.*; *Maitland* N. S. W. (*Backhouse!* in Hb. Hook.)

64. *Ficus orbicularis* (? Cunningh.) *MSS in Hb. Hook.* Ramis læviusculis, ramulis petiolisque pilis parcissimis verruculisque asperiusculis, foliis ovato-rotundatis, apice rarius acutiusculis, basi subtruncatis, marginibus repandulis brevi-setuloso-aculeolatis, trinerviis et parce venulosis, supra verruculis vitreis asperis, subtus glabriusculis glaucis, sub lente tenere reticulatis, stipulis lineari-lanceolatis glabriusculis, receptaculis axillaribus breviter pedunculatis depresso-globosis asperulis.

HAB. in littore boreali-occidentali (*Novæ Hollandiæ ?*) in rupestribus sterilibus, frutex 4–pedalis (Hb. Hook. !)

Petioli antice lato-excavati ½–1 cent., *folia* 3½–5 cent. longa, 2½–3½ lata. *Receptacula* piso paulo majora, basi tribracteata.

65. *Ficus indecora* n. sp. Ramulis petiolis pedunculis scabriuscule puberulis, foliis alternis ovatis vel ovato-ellipticis apice obtusiusculis vel acutis, basi truncatis vel subprotractis repando-subdenticulatis trinerviis costulisque venosis utrinque circiter 3, supra verruculoso-asperulis, subtus glabris pallidis læviusculis, receptaculis breviter pedunculatis subturbinato-globosis asperulis basi 3–bracteatis.

HAB. ad *Cascening-bay* (Cum.! in Hb. Hook.)

Præcedenti proxima. *Petioli* 2–5 mm., *folia* 2½–4½ cent. longa, 2–2½ lata. *Receptacula* pisi magnitudinis.

66. *Ficus aculeata* (*Cunningh.?*) *MSS. in Hb. Hook.* Ramis glabris, ramulis petiolis pedunculis molliter hirtellis, foliis alternis lato- vel ovato-ellipticis rotundato-obtusis, basi emarginatis, aculeolato-dentatis, trinerviis et utrinque circiter 6-costulatis, supra verrucis centro vitreis pilisque rigidis diaphanis asperrimis subaculeolatis, subtus pallide glaucis puberulis, receptaculis axillaribus pedunculatis solitariis ovatis scabris ore prominulo bracteis glabris membranaceis pluribus, basi bracteis 3.

HAB. In *Ora boreali* (Novæ Holl.?) Hb. Hook.!

Petioli ½–1 cent., *folia* 7–9 longa, 4½–6 lata rigide coriacea. *Stipulæ* caducæ laniculatæ puberulæ. *Receptacula* piso minora puberula et hispidula, *pedunculi* petiolo duplo breviores. Pili foliorum rigidissimi e verruca crenulata vitrea.

67. *Ficus opposita*, n. sp. Ramis glabris, petiolorum cicatri-

cibus tuberculatis, ramulis petiolisque hirtello-pubescentibus, foliis oppositis ovatis obtusiusculis æquilateris, basi leviter cordatis vel concavatis, trinerviis et utrinque circiter tri-costulatis, integerrimis, supra asperrimis in nervis puberulis, subtus luteo-tomentoso-pubescentibus, rigide coriaceis; receptaculis axillaribus geminis, breviter pedunculatis, subturbinato-globosis, puberulis et aspero-punctatis, basi in stipitem brevem constrictis, bracteisque 3, ore prominulo, bracteis parvis obtusis ciliolatis, cœterum glabris.

Hab. in *Nova Hollandia*, ad *Bremer River* (a. 1829, Fraser, n. 101! in Hb. Hook.)

Petioli 1, *folia* 6–8 cent. longa, 4½–5½ lata. *Pedunculi* 3 mm. longi. *Receptacula* 1½ cent. in diam.

68. *Ficus pisifera, Wall. List. n.* 4504. (Ficus asperifolia, Hook. Herb.) Foliis alternis brevissime petiolatis inæquilateri-subovato-oblongis, latere interiore versus basin multo angustato, acuminatis, apicem versus præsertim, extrorsum grosse et inæqualiter serrato-dentatis, cœterum repandis, basin versus integerrimis, trinerviis et utrinque 3–4-costulatis, subtusque (lutescenti-) reticulatis, utrinque pilis rarissimis, in nervo medio supra versus basin paulo crebrioribus punctulisque asperrimis; receptaculis lateralibus confertis ad rami partem inferiorem aphyllam breviter pedunculatis sublævibus punctulatis, ore hiante, bracteis verrucæformibus, basi stipitatis bracteisque tribus.

Hab. *Prince of Wales island.* (Hb. Hook.!) ——? (Wall.!)

Petioli 2–3 mm. longi, hispiduli; *folia* 14–17 cent. longa, 6–7 lata.

Rectius forsan ad *Subsect. C.*

69. *Ficus purpurascens, Desfont. Catal. H. Par. ed.* 3. *p.* 412. (? Blum. Bydr. IX. p. 471.) "Ramulis teretibus rectis, petiolis gemmisque terminalibus conico-subulatis, foliisque utrinque scabriusculis; his breviuscule petiolatis, late elliptico-oblongis acuminatis, basi obtusis, trinerviis, obtuse dentatis, nervis primariis remotis, costamque subtus convexo-prominentibus, rigidulo-membranaceis, epunctatis, pellucido-reticulatis, supra opacis viridibus, subtus purpurascentibus; receptaculis axillaribus, solitariis, pedun-

culatis, subrotundo-ellipticis, obtusis, scabriusculis." Kth. l. c. p. 21.

Hab. In *Java*? Colit. in *H. Amstelod.*

"*Folia*, 3½–3¾ pollicaria, 2–2½ lata. *Petioli* 5–7 lin. longi. *Receptacula* magn. grani piperis, viridia.

Species dubia.

70. *Ficus Symphytifolia, Lam. Encycl. II. p.* 498. *Vahl Enum. II. p.* 198, *excl. syn. Rheede* (tab. 62 legendum).

Hab. In *Java.*

71. *Ficus ampelos, Burm. Fl. Ind. p.* 226. *excl. syn. Rheedei,* plantam Rumphianam tantum spectat (Herb. Amb. IV. tab. 63), et speciem ab Indicis (F. asperrima, F. heterophylla, F. parasitica) quibuscum sæpe male consociata, diversam sistit.

b. cuspidatæ. Folia oblonga, abrupte longe acuminata, integerrima vel infra acumen grosse dentata vel serrata, aut sinu unilaterali excisa, scabra vel glabriuscula. *Receptacula* in stipitem constricta, sæpe basi nuda, hinc rectius sessilia dicenda.

72. *Ficus cerasiformis, Desfont. Cat. Hort. Paris, ed.* 3. *p.* 413. (F. acuminata, Bot. Magaz. haud Hamilt. nec Roxb.) Ramulis, petiolis, receptaculis, foliisque subtus molliter pubescentibus, his inæquilateri-oblongis, longe abrupte acuteque acuminatis, supra glabris nitidis, integerrimis, subtus 3–5-nerviis, utrinque 2–3-costatis, costulis reticulatis subtus convexo-prominentibus, petiolis pubescentibus, receptaculis axillaribus, vulgo solitariis globosis, in stipitem longum basi bracteatum constrictis, hispidulo-pubescentibus, maturis aurantiacis.

Hab. In *Ind. orient.* (teste Hook.) In hortis culta.

Petioli breves. *Folia* 11–21 cent. longa. *Receptacula* cerasi magnitudine.

73. *Ficus radicans, Roxb. Fl. Ind.* III. *Wight Icon.* (F. acuminata, Herb. Hamilt. et Wall. List, n. 4478 Kunth, l. c. p. 21. F. eurycœfolia, Hort. Berol. olim teste Kth. in Ind. Sem. Hort. Berol. 1846, p. 21. F. caryophylla, Hort. Leydensis.) Ramulis petiolisque subsquamuloso-scabris, foliis coriaceo-membranaceis rigidiusculis oblongis, vulgo angusto-oblongis vel minoribus, ellipticis, abrupte longe lineariter acute vel obtuse acuminatis,

basi vulgo acutis rarius obtusis, integerrimis, supra nitidis lævibus, subtus 3-nerviis et utrinque 4–5-costulatis, crebro prominenter pallide reticulatis, inter reticulationes punctulatis, glabris; receptaculis axillaribus geminis et solitariis, obovato-globosis, in stipitem longum basi 3-bracteatum constrictis, pubero-hispidulis.

HAB. In *Ind. orient.* variis locis; communis ut videtur species, ex Roxb. descriptione ægre recognoscenda, sed ex icone ejus eximia quam maxime certa.—*Assam* (Hb. Hook.!); *Gualpam*, *Silhet* (Ham.!); *Ins. Philippinæ*, *forma* recept. maturis glabris alioquin non diversa (Cuming, n. 1942!)

Folia 9–15 cent. longa.

74. *Ficus urophylla*, *Wall. List*, *n*, 4483. Ramulis petiolisque subsquamulosis, foliis alternis breviter petiolatis, ellipticis vel obovato-ellipticis, abrupte suboblique longe argute obtusiuscule acuminatis basi acutis, integerrimis, supra lævissimis nitidis, subtus (in sicco fuscescentibus) trinerviis paucicostulatis reticulatis, utrinque glabris; receptaculis axillaribus geminis vel deorsum lateraliter subfasciculatis globosis vel ellipsoideis in stipitem longiusculum constrictis et 3-bracteatis cum stipite hispidulo-pubescentibus.

HAB. *Penang* (Wall. n. cit.!), *Prince of Wales Isl.* (Dr. Hunter! in Hb. Hook. "F. marginalis"). A præcedenti, cui arcte affinis, foliorum forma distinctissima. *Folia* 7–10 cent. longa. *Receptacula* pisi magn., stipite breviora.

75. *Ficus rostrata*, *Lam. Encycl. II. p.* 498, *Vahl Enum. II. p.* 200, descr. optima.

HAB. *Javam* (Commers., Spanoghe! Lobb! in Hb. Hook.)

Receptacula brevissime stipitata.

76. *Ficus cuspidata*, *Blume Bydrag. Nederl. Indie.* Foliis elliptico-lanceolatis longissime acuminatis, acumine ½ folia longiore recto vel leviter curvato lineari obtuso, integerrimis vel versus apicem repandis, aut infra acumen utrinque unidentatis, basi acutis æquilateris, supra nitidis, subtus patule costulatis tenuiter reticulatis fuscescentibus punctulatis subasperulis; receptaculis axillaribus vel ad axillas veteres subfasciculatis globosis ore perviis basi in stipitem brevem basi bracteatum constrictis.

HAB. *Javam* (Blume; Lobb! in Hb. Hook.).

Petioli ½, *folia* 8–12 cent. longa, 2–2½ fere 3 lata. *Receptacula* nunc seminis coriandri magni, glabra, læviuscula.

77. *Ficus raridens*, n. sp. Ramis lævigatis, ramulis petiolis receptaculis foliisque subtus asperulo-punctulatis, his supra lævissimis nitidis breviter petiolatis oblongis abrupte acuminatis, acumine lineari obtuso, basi acutis, integerrimis vel infra apicem inæquilateris vel unidentatis, quandoque lateraliter sinuatis; receptaculis axillaribus geminis vel solitariis globoso-urceolatis ore brevitubuloso crenulato hiante, basi in stipitem uni- vel ad basin paucibracteatum constrictis.

HAB. *Sumatram* (Hb. Hook.!)

Petioli ½–fere 1 cent., *folia* 12–17 cent. longa, 4–5 lata, subtus pallida venulis patulis 6–8 utrinque ante marginem confluentibus.

78. *Ficus trachycarpa*, n. sp. Ramulis petiolis foliisque subtus asperulis et pilis teneris scabriusculis fugacibus inspersis mox glabris, foliis modice petiolatis oblongis vel lanceolato-oblongis inæquilateris, abrupte lineari-acuminatis, basi subæquali acutis, præsertim versus apicem repando-dentatis, trinerviis et utrinque 4–5-costulatis, supra læviusculis; receptaculis axillaribus solitariis breviter pedunculatis ovatis, scrobiculato-verrucosis basi constrictis tribracteatis.

HAB. In *India boreali, Bheem val.* Apr. 1844. (Dr. Thomson in Hb. Hook.!)

Petioli ½, vix 1, *folia* 10–14 cent. longa, 4–4½ lata. *Receptacula* 1½ longa, ore bracteis imbricatis occlusa.

Var. paucidentata, foliis quibusdam repandis vel integerrimis, recept. junioribus lævibus. *Assam* (Hb. Hook!)

79. *Ficus pulchra, Wall. List, n.* 4571. Glabra; foliis oppositis (an semper?), modice petiolatis, oblongis vel lanceolato-oblongis, æquilateris, abrupte anguste acuminatis, basi acutis, apicem versus remote dentatis, supra lævibus glabris, subtus (in sicco) fuscescentibus, nervo medio costisque utrinque 6–8, venulisque reticulatis, receptaculis . . . . . .

HAB. *Singapur* (Wall.!)

Petioli semiteretes 1½–2½, *folia* 15–20 cent. longa, 5–6½ supra medium longa.

80. *Ficus clavata, Wall. n.* 4495. Glabra; foliis breviter petiolatis, oblongo-lanceolatis, abrupte longe anguste acuminatis, integris vel subrepandis, quibusdam infra acumen uni- vel bi-dentatis, rigido-membranaceis, trinerviis et utrinque 4-costulatis, haud reticulatis; receptaculis axillaribus solitariis breviter pedunculatis obovatis, basi stipitatim constrictis, tribracteatis, ore bracteis erectis ellipticis obtusis puberulis ......

HAB. In *Nepalia* (*Wall.*!)

Similis omnino et verisimiliter conspecifica lecta est a cl. *Griffith* in *Khasiga*, foliis infra apicem sæpe dente acuto, et receptaculis solitariis et geminis globosis, itaque a specie diversis, sed probabiliter ætatis causa. *Folia* 7–12 cent. longa, 1½–2 lata.

81. *Ficus acuminata, Roxb. Fl. Ind.* III. *p.* 538, nimis breviter descripta, præcedenti certo quidem affinis.

82. *Ficus salicifolia*, n. sp. Ramulis, petiolis, pedunculis asperulo-puberulis; foliis breviter petiolatis, lanceolatis vel oblongo-lanceolatis, acuminatis, acumine anguste lineari summo apice aliquid dilatato, basi acutis, integerrimis vel repandulis, utrinque glabris, trinerviis et utrinque 5–6-costiveniis; receptaculis axillaribus geminis subglobosis in stipitem basi vulgo tribracteatum apice unibracteatum constrictis, ipsis apice pluribus bracteis, lateraliter paucis instructis.

HAB. *Assam* (Hb. Hook.!)

Rami teretes, læves. *Petioli* 2–5 mm. *Folia* 7–12 cent. longa. *Stipulæ* lineari-lanceolatæ, membranaceæ, filiformi-attenuatæ. *Receptacula* nunc semine coriandris minora.

83. *Ficus caudata, Wall. List, n.* 4494. Glabra; foliis alternis brevissime petiolatis, elongato-sublineari-lanceolatis, longissime angusteque acuminatis, infra acumen utrinque 2–3-dentatis, cæterum integerrimis, rigide membranaceis, tactu quidpiam asperulis; receptaculis axillaribus solitariis?

HAB. *montes Silhet* (Wall.!)

Folia trinervia, nervulis lateralibus venulas conjungentibus, 10–12 cent. longa, 1¼ lata.

84. *Ficus uniglandulosa, Wall. List, n.* 4479. Glabra; foliis

breviuscule petiolatis cuneato-obovato-oblongis, abrupte lineariter obtusiusculo acuminatis, integerrimis, supra lævibus, subtus pallidis, costulis utrinque 4 patule adscendentibus, parce reticulatis; receptaculis ad axillas defoliatas vel axillaribus solitariis, geminis vel glomeratis parvis globosis in stipitem tenuem constrictis, ore fere nudis.

HAB. *Penang* (Wall.!)

Petioli 5–10 mm. *Folia* 10–16 cent. longa, 4–5½ lata.

85. *Ficus grandifolia, Wall. List, n.* 4525. Ramulis, petiolis, foliisque scabriuscule pubescentibus; foliis breviter petiolatis oblongis æquilateris vel inæquilateris, apice obtuso-rotundatis (?), basin versus paulisper attenuatis, integerrimis, ad ½ fere altit. trinerviis, costisque utrinque 3–4 adscendentibus transverse reticulatis, supra lævissimis nitidis adultis glaberrimis, subtus fuscescenti-pallidis, costis venulisque convexo-prominentibus . . . . . .

HAB. *Penang* (Wall.!)

Sp. imperfectum; species spectabilis, habitu ad *F. radicantem* accedens. *Petioli* 1–1½, *folia* 27–38 cent. longa, 9–14 lata, coriacea.

Species in Sect. dubia.

86. *Ficus tenuiramis, Kunth et Bouché, in Ind, Sem. H. Berol.* 1846, *p.* 21. (F. cuspidata, Desfont. Cat. ed. 3. p. 413, nec Blume). "Ramulis gracilibus subflexuosis teretibus, scabriusculis; foliis breviter petiolatis, lanceolatis, acuminato-cuspidatis, basi oblique acutis, trinerviis, integerrimis, nervis primariis remotis, patentissimis, subtus vix prominulis, costa supra prominula, subtus prominente, membranaceis, epunctatis, glabris, supra opacis, subtus pallidioribus; gemmis terminalibus subulatis, receptaculis . . . . . .

"HAB. ? verisim. in *Ind. or.*

"*Folia* 4–4½ poll., 11–12 lin. lata. *Petioli* 2 lin. longi."

87. *Ficus reticulata, Thunb. Fic. p.* 12. *Vahl Enum.* II. *p.* 199.

HAB. In *India orientali.*

F. *radicanti* affinis videtur; et nisi omnes partes glabras dixisset Thunb., ad eam retulissem.

c. pallidæ. *Folia* oblonga integerrima, inæquilatera, costivenia, integra, in quibusdam dente uno alterove grossiusculo, scabra, puberula vel sæpe lævia et glabra. *Receptacula* in stipitem nudum ima basi tantum bracteatum, constricta, globosa, vel subturbinato-globosa, scabriuscula vel lævissima. *Phylla perigonii* hyalina ciliolata.

88. *Ficus parasitica, Kœnig MSS.*; *Willd. Dissert. Fic. p.* 25, *tab.* 3; *Vahl Enum.* II. *p.* 188; *Wallich List.* 4476. *F. ampelos, Kœnig Serins MSS.* (*Hb. Russell.*); *Roxb. Fl. Ind.* III. *p.* 553; *Wight Icon.* II. *tab.* 652.—(? F. excelsa, Vahl Enum. II. p. 195, haud Roxb. Fl. Ind.; Vahlii sp. a Kœnig missum, itaque etiam ex *peninsula Indiæ,* dum pl. Roxb. est *Moluccensis.*)—Rheede H. Malab. tom. III, tab. 56 et 58 quæ formam grandiorem refert. (*F. ampelos,* Lam. *Encycl. Teregam,* Rheede III, tab. 60 ab hac diversa.)

Foliis alternis modice petiolatis, oblongis, ovato-vel obovato-oblongis inæquilateris integerrimis acutiusculis vel breviter obtuso-apiculatis basi plerumque lata vulgo aliquid protracta subtrinerviis costulisque utrinque paucis patulis ante margines reticulato-confluentibus utrinque glabriusculis et præsertim subtus asperulis; receptaculis axillaribus geminis globosis in stipitem basi tribracteatum constrictis.

Hab. in *regionibus montanis, Assam,* &c. (Hb. Hook.! Wight!)

Species admodum variabilis, mox foliis minoribus magis æquilateris, mox majoribus valde inæquilateris, nunc glabris et læviusculis, nunc subtus scabro-hirtellis, asperioribus insignis; ita ut arbitror intuenti plures species distinctas differre videretur.

Omissis aliis nunc indicare sufficiat formam peculiarem *dentatam,* foliis aliis integerrimis, aliis angulato-sinuato-dentatis. (Wight! in Hb. Arnott.)—Num ad hanc *F. rhomboidalis,* Vahl Enum. II. p. 199, ex *India or.* a Ruttler missa?

89. *Ficus pervia,* n. sp. Ramis lævigatis cinerascentibus; ramulis junioribus et petiolis fuscescentibus punctato-asperulis, his modice petiolatis, alternis, subcuneato-oblongis vel anguste ellipticis, æquilateris vel inæquilateris, obtusiuscule acuminatis vel api-

culatis, integerrimis trinerviis, et utrinque 4–5-costulatis, utrinque glabris et lævibus, subtus subasperulis (in sicco lutescentibus); receptaculis axillaribus geminis, globosis, longe stipitatis, asperis, oris margine circulari mox subdeciduo, hiantibus; stipite basi bracteis 3 involucrato.

HAB. *Assam* (Hb. Hook.!)

Foliorum forma a F. *parasitica* et affinibus distinguitur. *Petioli* 1 cent. fere æquantes. *Folia* 7–10 cent. longa, 3–4 lata; nervo, costis, venulisque parcis subtus prominentibus. *Receptacula* pisi magnitudinis. *Perigonia* hyalina

90. *Ficus angustata*, n. sp. Glabra, sublævis; ramulis, petiolis, foliisque sub-asperulis, his breviter petiolatis, coriaceis oblongo-lanceolatis, plerumque inæquilateris obtusiuscule acuminatis vel apiculatis, basi cuneato, subtrinerviis et utrinque 4-costulatis, costulis arcuato-patulis, subtus reticulatis; receptaculis axillaribus geminis globosis glabris in stipitem constrictis.

HAB. *Ind. or.* (Wight!)

Partes nascentes tenera pube inspersæ. *Folia* 5½–8 cent. longa, 2–2½ lata.

91. *Ficus tuberculata, Roxb. Fl. Ind.* III. *p.* 554; *Wight Icon. tab.* 651.

HAB. in *montibus Coromandeliæ.* (Roxb.)

92. *Ficus hederacea, Roxb., l. c. p.* 538; *Wight, l. c. tab.* 653.

93. *Ficus sclerophylla, Roxb., l. c. p.* 546, mihi prorsus dubia, ex *Chittagong*, alterius inquirenda; ex phrasi brevissima ad sequentem fere accedens.

94. *Ficus cuspidifera*, n. sp.? (F. excelsa, Wall. List, n. 4477, haud Vahl.) Ramulis, petiolis, receptaculis pube tenera appressa fugaci inspersis; foliis modice petiolatis, lanceolato- vel inæquilateri-oblongis, anguste anteque acuminatis, basi acutis, integerrimis vel sursum repandis, membranaceis, glabris, lævibus, subtrinerviis, et utrinque 5–8-venosis; receptaculis axillaribus globosis, in stipitem longum basi bracteatum constrictis.

HAB. *Nepaliam.* (Wall.!)

Rami læves, teretes. *Petioli* ½–1, folia 7–15 cent. longa. 3–4½ lata. *Receptacula* nunc pisi magnitudinis.

Observ. *F. Chincha,* Roxb. Fl. Ind. III. p. 544, dubia species, hujus fere loci esse videtur.

95. *Ficus Altimeraloo,* Roxb. MSS. —(F. excelsa ejusd. Fl. Ind. III. p. 552, excl. syn.—Rheed. Hort. Malab. haud Vahl.) —Wight. Icon. tab. 650 (errore *Allameeraloo*); F. terminalis, Roth.? l. c. p. 392 ex descr. satis convenit.

Ex *ins. Moluccis* in *H. Calcutt.* introducta; in peninsula ipsa sponte crescere haud videtur. Rheedei enim Alti Meer Alou rectius omnino ad F. *parasiticam* pertinet.

Synonymo hoc male citato factum est, ut hæc sp. sæpe cum F. *parasitica* confusa fuerit, a qua glabritie statim differt. Huc Cum. n. 1922! ex ins. *Philippinis.* Num huc etiam Cum. n. 1923?

96. *Ficus reticulosa,* n. sp. Glabra, lævis; foliis breviter petiolatis, inæquilateraliter oblongis, brevissime acuto-apiculatis, basi abrupte acutis, supra petiolum subemarginatis, integerrimis, rigide coriaceis, trinerviis et utrinque patule multinerviis subtusque crebro reticulatis; petiolis transverse rimoso-scabris, antice sulcatis; stipulis lineari-lanceolatis, rigidis, scabriusculis; receptaculis axillaribus, globosis, in stipitem basi tribracteatum constrictis, læviusculis.

Hab. In *India or.* (Wight! n. 29 et 11 bis). Præcedenti prox. sub F. *excelsa* a D. Abel ex Ind. or. vidi in Hb. Hook. sp. grande.

97. *Ficus philippinensis,* n. sp. Glabra; ramulis trigonis; foliis brevissime petiolatis, subcoriaceis ovato-oblongis, plerumque inæquilateris, longe acuminatis, ima basi in petiolum subdecurrentibus, integerrimis, lævissimis, glabris, utrinque sub lente subpunctatis, ima basi tenuiter trinerviis, costulisque venosis utrinque 10–15 patulis, ante marginem complectentibus venulisque tenuioribus; receptaculis axillaribus, solitariis et geminis, in stipitem constrictis.

Hab. *ins. Philippinas* (Cuming! n. 1937).

F. *Altimeraloo* affinis, sed bene distincta. *Folia* 10–16 cent. longa, 4–5 lata. *Stipulæ* anguste lanceolatæ, convolutæ, filiformi-attenuatæ, rigidæ, 1½–2 cent. longæ.

98. *Ficus insularis,* n. sp. Glabra, lævis; foliis breviter petiolatis, submembranaceis, subtus pallidis, ellipticis vel oblongis,

sub-abrupte acuminatis, basi obtusiuscula æqualibus vel ea parumper dilatata inæqualibus, integerrimis, planis, venulis patentibus utrinque 8–10, aliisque tenuioribus; stipulis lineari-lanceolatis, acuminatis, strictis, complanatis; receptaculis axillaribus globosis in stipitem longiusculum ima basi bracteatim constrictis.

HAB. ins. *Loo-Choo* (Hb. Hook.! sub F. pumila?)

Petioli 2–4 mm.; *folia* 7–10 cent. longa, 3½–4 ½lata; *stipulæ* 1–1½ cent.

Forma minor? ibid. (Hb. Hook.! sub F. septica?) Species affinis videtur *Cuming*, e *Philipp.* n. 1943.

99. *Ficus tinctoria, Forst. Prodr. n.* 405. *Guillemin in N. Ann. d. Sc. Nat. tom.* VII. *p.* 185. (Tab. nostr. VI. *B.*)

HAB. in *ins. Societatis* (Forst.); *Tahiti* (Hb. Hook.!)

A præcedenti *foliis* latioribus et non acuminatis distinguitur. *Receptacula* brevissima pedunculata, longe stipitata.

Tab. VI. *B.* Ficus tinctoria, F., n. m. cum *a.* recept.; *a.*, fl. masc. cum pistillo fere normali, *a. m.*; *b*, stamen; *c* et *d*, genitalia florum aliorum; *e*, fl. fœm. alabastrum; *f*, pistillum; *g*, stigma.

100. *Ficus septica, Rumph. Amboin. III. p.* 153, *tab.* 96; *Burm. Fl. Ind. p.* 226; *Vahl Enum. II. p.* 186, *excl. syn. Rheed.*

HAB. in *ins. Moluccis.*

Præcedentibus arcte cognata, sed illæ omnes petiolis suis brevibus jam distinguendæ.

101. *Ficus undulata*, Hamilt. in Linn. Soc. Trans. vol. XV. p. 133. excl. syn. Rheedei n. sp. videtur, cujus specimen sub n. 2416 Biblioth. Soc. Anglo-Ind. Lond. exstant, autopsis examinanda.

§ 5. *Plagiostigma.* (*Plagiostigma*, Zuccarin. in Abh. d. Math. phys. classe d. Bayer Akad. d. Wissensch. I. (1844). *Tenorea* Gasparr. nov. gen. p. 6; Ricerche, p. 81. tab. VIII. fig. 22–31.) *Receptacula* pyriformia intus bracteolata et sæpe pilosula. Sessilia vel pedunculata basi tribracteata. Fl. monoici. *Perig. phylla* 4 et plura (colorata). *Stamina* 2–5. *Stigma* oblique truncatum. *Folia* integra, integerrima, glabra vel pubescentia.

Observ. Genera a cl. Zucc. et Gasp. proposita. Speciebus plurimis intermediis cum Ficus genere confluunt.

102. *Ficus Gasparriniana*, n. sp. Ramulis lævibus, foliis al-

ternis oblongis acuminatis, basi acutis obtusis vel emarginatis trinerviis et costulatis integerrimis vel versus apicem serrulatis utrinque punctulatis, sæpe scabrido-ciliolatis, receptaculis axillaribus plerumque solitariis pedunculatis pyriformibus basi attenuatis, ore constricto bracteatis, floribus vix bracteolatis.

HAB. *Assam* (Hb. Hook.!)

Folia dissita. *Petioli* semiteretes præsertim superne antice hirtelli. *Folia* 12–24 cent. longa, 5–8 lata, costulis utrinque 5–6. *Pedunculi* triangulares ½ cent. ima basi quandoque bracteati puberuli. *Receptacula* 1–2 cent. longa, præter stipitem glabra, ore bracteis fuscis coronato. *Perigonia* 4–6-phylla, *stamina* 2–5.

103. *Ficus Beecheyana, Hook. et Arn. ad Beech. Voy.* Ramulis petiolis receptaculis junioribus foliisque subtus præsertim in nervis hirtello-puberulis, foliis densis modice petiolatis ellipticis breviter acuminatis basi leviter cordatis vel subemarginatis integerrimis supra fugaciter puberulis subcoriaceis trinerviis et utrinque patule 4-veniis, receptaculis axillaribus pedunculatis ellipticis demum subglobosis basi brevi-stipitato-constricta tribracteatis.

HAB. *Loo-Choo.* (Beechey! in Hb. Hook.)

Rami glabri læves; juniores pilis teneris inspersi. *Petioli* subteretes antice anguste sulcati hirtelli glabrescentes ½–1½ cent. longi. *Folia* provectiore ætate fere glabra, supra saturate viridia, subtus glaucescentia, demum fusca et sub lente punctata in acumen breve acutiusculum vel obtusiusculum desinentia, æquilatera 5–9 cent. longa, 2½–3½ lata, tenere venulosa vix reticulata. *Stipulæ* lanceolatæ carinatæ membranaceæ appresse puberulæ 1 cent. vix æquantes. *Receptacula* juniora cum *pedunculis* ½ cent. longis puberula, ætate glabrata, juniora elliptica, basi tribracteata, ore bracteis erectis membranaceis obtusis ciliolatis in sicco fuscis coronata, adulta globosa, 1 cent. crassa, ima basi in stipitem constricta, ore prominulo apiculata.

104. *Ficus umbonata, Wall. List.* n. 4548.

HAB. *Silhet.* (Wall.!)

105. *Ficus pyriformis, Hook. et. Arn. ad Beechey Voy.* Foliis alternis breviter petiolatis cuneato-lanceolatis acutis vel subacuminatis integerrimis subtus cum petiolo ramulis receptaculisque

scabriuscule pubescentibus, nervo medio subtus cum petiolo rubescente patule venuloso; receptaculis axillaribus solitariis (an semper?) pyriformibus basi 3-bracteatis, intus inter flores sparse puberulis. [Tab. VI. A.]

HAB. *China.* (Abel! in Hb. Hook.)

Rami lævigati; *petioli* 1–4 mm.; *folia* 5–6 cent. longa, 1–1⅔ supra medium lata. *Pedunculi* ½, *receptacula* nunc 1½ cent. longa, ore prominulo bracteis glabris clauso. *Flores* densi, *fem.* et *masc.* mixti. *Perigonium* rigidum coriaceum rubro-fuscum nitidum pedicellatum, *phyllis* vulgo 4-lanceolatis concavis imbricatis in apicem teneriorem excurrentibus, haud prorsus æqualibus. *Fem. Pistilla* sæpe 2, *unum nanum,* obovatum in *stylum* rectum truncatum terminatum, *alterum normale* majus, obovatum, *stylo* laterali parvo, *stigmate* obliquo lineari-filiformi basi concavato, quandoque cruris nani rudimento instructo. *Achænium* gynophoro longo nitido sustentum oblique obovatum fuscescens siccum stylo vulgo rostratum. *Masc.* pauci, *perigonii* magis globosi, *phyllis* 4. *Stamina* 4, 3 vel sæpius 2, perigonii phyllis opposita inclusa, *filamentis* semiteretibus, *antheris* ovatis, loculis antice unitis, connectivo dorsali adnatis, dorso sub lente sæpe ciliolatis. Inter stamina *pistilli rudimentum,* in *fl. tetrandris globosum,* stylo abortivo rostratum, in *triandris* et *diandris* sæpe vix ullum. Ad basin singuli fl. masc. bracteola concolor lanceolata carinato-navicularis.—In sp. culto *fl. nascentium perigonium* 4-dentatum et stigma inæqualiter bicrure. [Tab. VI. A. *F. pyriformis,* Hook. et. A. fructif. a. m. *a,* fl. masc. triandr. cum pistilli rudimento; *b,* fl. masc. diandr. cum bracteola; *c,* anthera a dorso; *d. e. f,* fl. fem. varii; *g,* fl. fem. alterius pistilli rudimento; *h,* pistilla juniora; *i,* achenium; *k,* apex pistilli nani, omnes varie auctæ.]

106. *Ficus Millesii,* n. sp. Ramulis petiolisque minute hirtellis, foliis alternis breviter petiolatis lanceolatis tenuiter acuminatis æquilateris, integerrimis basi trinerviis et patule costiveniis, subtus pallidis, glandulose punctatis glabris; receptaculis axillaribus vel subterminalibus ovato-pyriformibus pedunculatis, basi in stipitem angulatum sparse irregulariter paucibracteatim constrictis, subglabris.

HAB. *China* (Millet! in Hb. Hook. sub F. *pyriformi.*)

Petioli 1–3 mm., *folia* 4–5 cent. longa, 1 lata. *Stipulæ* lanceolatæ 2 mm. longæ diutius persistentes. *Receptacula* cerasi magnitudinis rubicunda, ore prominulo vulgo *bracteis* 4 parvis subvalvatim clausa, intus sub ore bracteis parvis occlusa, cæterum vix bracteolata. *Flores* quos vidi omnes *feminei,* sessiles, perigonii phyllis 4 ovalibus acutis concavis junioribus ciliolatis parvis, demum achenii basi arcte applicatis. *Ovarium* sessile. *Achenia* majuscula densa ventre dorsoque fere cristatim incrassata, pericarpio pulposo rubescente.

107. *Ficus Fieldingii,* n. sp. Glaberrima; foliis alternis longiuscule petiolatis oblongis vel lanceolato-oblongis longe anguste acuteque acuminatis, basi cuneatis, integerrimis vel repandis, coriaceis, trinerviis et utrinque 6–8-venosis; receptaculis axillaribus, solitariis?, brevissime pedunculatis, basi tribracteatis ellipsoideis glabris, acheniis subtrigonis vel semi-ovatis, pallidis, phyllis perigonii parvis.

HAB. *Assam* (Hb. Hook.!); *Simla* (Fielding!)

Petioli $1\frac{1}{2}$–$2\frac{1}{2}$, *folia* 10–12 cent. longa, subtus in sicco fuscescenti-reticulata.

108. *Ficus stipulata, Thunb. diss. de Ficu, n.* 7. (Plagiostigma stipulatum, Zuccar. l. c. in nota. Tenorea heterophylla, Gasparr. Ricerche, p. 81.) Ramis radicantibus, junioribus hirtis, foliis oblique ovatis acutiusculis, glabris subtus pallidis nervisque albidis prominentibus, ramulorum fructiferorum majoribus ovato-oblongis obtusis, basi subcordatis et fere æqualibus, stipulis deciduis ovato-triangularibus subtus appresse pilosis; receptaculis magnis pyriformibus vel turbinatis setosis, serius glabris subviolaceis.

HAB. *China, Japonia* (Thb.); *China* (Millet!)

109. *Ficus pumila, Thunb. l. c. n.* 10. *Linn. Syst. vegetab. p.* 774. (Ficus sylvestris procumbens fol. simpl. Kæmpf. Am. ex. p. 803 cum icone. Syn. Rumph. a Linn. et Burm. cit. huc non pertinet.)

HAB. *China, Japonia* (Kæmpf. Thb.)

110. *Ficus erecta, Thunb. l. c. p.* 5. (Ficus pumila, β Thunb. Fl. Jap. p. 33.)

HAB. *Japonia* (Thb.)

111. *Ficus punctulata, Thunb. Fic. p.* 9. Glabra; foliis oblongis obtusis obsolete emarginatis integerrimis glabris, marginibus leviter reflexis, subtus impresso-punctatis, brevissime petiolatis; receptaculis obovatis (magnitudine fere Caricæ).

HAB. *India orientalis* (Thunb.) An Synœciæ species?

112. *Ficus disticha, Blume Bydrag.* 458. Glabra; foliis modice petiolatis cuneato-obovatis ellipticisve apice rotundato retusis vel emarginatis basi cuneatis vel acutis coriaceis lævibus, marginibus integerrimis leviter revolutis, trinerviis et paucivenosis haud reticulatis subtus punctatis (sub lente scil. inter venularum reticulationes elevatis); receptaculis axillaribus geminis vel solitariis, sessilibus vel brevissime pedunculatis, pyriformibus basi substipitatim attenuatis, 3-bracteatis.

HAB. *Javam* (Lobb!); *Ceylon* (Walker, n. 1179!)

Habitu *Synœciam diversifoliam* refert. *Rami* læves; *ramuli* in sicco cum petiolis et receptaculis fusci (in vivo rubescentes?). *Petioli* subteretes, mox rimoso-squamulosi ½-fere 1 cent. longi. *Folia* supra saturate viridia, subtus pallidiora 3–5 cent. longa, 2–2⅓ lata, supra lævissima, nervo medio tantum versus basin sulcata, subtus venulis utrinque 3–4 patulis notata. *Stipulæ* parvæ rigidulæ subulato-convolutæ. *Receptacula* juniora 1 cent. longa, pedunculo brevi 1–3 mm. longo, subinde fere nullo, basi *bracteis* 3 circumscisse deciduis instructa, glabra, ore semigloboso-prominulo 3 bracteis concavis parvis glabris occlusa, intus sub ore bracteata, cæterum parvis setulis instructa. *Fl. fem. perigonio* 4–phyllo fusco, ovario sessili, *stylo* brevi, *stigmate* obtuso perforato.

113. *Ficus elliptica.* Glabra; foliis breviter petiolatis ellipticis subæquilateris basi obtusis raro acutis, apice rotundato-obtusis, raro retusis, trinerviis et pauci venulosis, subtus punctatis (sub lente inter reticulationes elevatis), coriaceis marginibus integerrimis leviter revolutis, stipulis parvis rigidis lanceolato-linearibus acuminatis convolutis glabris, receptaculis . . . . . .

HAB. *Philippinas* (Cuming! n. 1927.)

Præcedenti proxima et simillima; parasitica repens. *Ramuli* subsemiteretes. *Petioli* 2–5 mm.; *folia* 3½–4½ cent. longa, 2–2½ vix 3 lata. *Stipulæ* ½–1 cent. longæ.

114. *Ficus spathulata.* (Ficus retusa, Herb. Madrasp. Wallich, n. 4530. An et B. et sp. Wight? quæ non vidi.) Glabra, foliis modice petiolatis cuneato-spathulatis, apice rotundatis, versus basin valde attenuatis, integerrimis, subcoriaceis, subtrinerviis, nervis lateralibus ad marginem adscendentibus in venularum arcus continuatis, medio ad ⅔ alt. vel prope apicem bifido venulisque parce reticulatis subtus prominulis; receptaculis axillaribus solitariis (an semper), longe pedunculatis ovato-urceolatis, basi tribracteatis, verticis constricti ore bracteis plurimis parvis dense repleto.

HAB. *Madras* (l. c.)

Habitu et foliorum nervatione *Synœciam diversifoliam* refert, floribus autem generice differt. *Petioli* ½ cent. longi; *folia* 3½–5 cent. longa, ⅔–1⅔ supra medium lata. *Pedunculi* tenues 1 cent.; receptacula pisi fere magn. basi *bracteis* 3 concavis obtusis ciliolatis suffulta, intus nunc repleta *achæniis* pallidis angulato-globosis phyllis fuscis perigonii interpositis. *Ovaria* quædam adsunt sessilia semi-ovata, *stylo* abbreviato, stigmate perforato.—Num huc F. *ovoidea,* Kth. in Ind. Sem. H. ber. 1846. p. 20, haud Jack?

115. *Ficus diversiformis,* n. sp. Ramulis fuscis, nascentibus, petiolis foliisque utrinque pilis minutis inspersis, foliis alternis breviter petiolatis, ellipticis ovatisve obtusis vel acutiusculis, plerumque æquilateris, basi leviter cordatis, integerrimis, integris vel trilobis, subtus pallidis, trinerviis et parce venosis, supra demum asperiusculis vel lævibus, stipulis lanceolatis fuscis membranaceis.

HAB. *Ceylon,* alt. 1600 ped. (Walker, n. 9!, 368!, 1338! in Hb. Hook.)

Repens radicans ad instar *Synœciæ falcatæ.* *Folia* 1½-fere 3 cent. longa; obliqua vel æquilatera, elliptica, alia integra, alia lateribus subsinuata, plura triloba.

116. *Ficus barbata, Wall. List,* n. 4576. Repens, radicans, ramis subretrorse villosis, foliis disticho-alternis breviter petiolatis ovato-cordatis ante apiculatis integerrimis trinerviis et utrinque 4 costulatis, supra glabriusculis vel sparse pilosis, subtus villosis.

HAB. *Penang* et *Singapore,* (Wall.!)

Folia 10–5 cent. longa. In *H. Amst.* species sponte in caldario enata, ab hac vix diversa. Num ex hac § F. *sagittata, Vahl Enum.* II. *p.* 185 *a Kœnigio* ex *Ind. or.* missa, quam inter Roxburgianas species frustra quæsivi.

Species dubia: F. *callosa, Willd. diss. fic. p.* 25, *tab.* IV.

§ 6. *Podosycea. Folia* alterna vel subopposita, oblonga, integerrima, trinervia et costulata, pubescentia; *receptacula* axillaria, gemina, vel ramulo inter ea continuato infraramulina, pedunculata, basi in *longum stipitem* constricta, tribracteata; *flores* fuscescentes, monoici; 4–5-phylli; *masc.* superiores; *stamina* 2–3, *filamentis* abbreviatis, *antheris* bilocularibus, oblongis, utrinque emarginatis. *Fem. stylus* brevis, *stigmate* inæqualiter bicruri vel oblique subpeltato.

117. *Ficus macropoda,* n. sp. Molliter subincano-pubescens; foliis alternis vel summis suboppositis, oblongis vel angusto-oblongis, basi quandoque subemarginatis, integerrimis, trinerviis et utrinque venuloso-costulatis; receptaculis axillaribus vel infra-axillaribus, pedunculatis, geminis, suburceolato-globosis, in stipitem longissimum tenuem constrictis, pubescentibus.

Hab. *ins. Philippinas.* (Cuming. n. 1933!)

Petioli 1½–2; *folia* 9–10 cent. longa, 4–4½ lata. *Gemmæ* ovatæ, parvæ, incanæ. *Pedunculi* 5 mm. longi, cum stipite 2 cent. longo, fere continui, sed *bracteis* 3 parvis serius deciduis interstincti. *Receptacula* pisi magn.

118. *Ficus pedunculosa,* n. sp. Ramulis, petiolis, pedunculis foliisque nascentibus subtus in nervis parce puberulis; his alternis et suboppositis, oblongis vel obovato-oblongis, obtusiusculis, basin versus subattenuatis, integerrimis, coriaceis, lævibus, trinerviis, utrinque pauci-costatis; receptaculis axillaribus, geminis, pedunculatis, demum glabriusculis stipitem summo æquantibus.

Tab. VII. *A.* Ficus pedunculosa, n. m. *a.* fl. masc. cum bracteolo; *b,* stamen; *c.* et *d,* fl. fem.; *e,* pistilla; a. m.

(*To be continued.*)

BOTANICAL INFORMATION.

ALGÆ NOVÆ ZELANDIÆ. BY DR. HOOKER AND DR. HARVEY.

(Supplementum primum.)

(Continued from vol. 4. *p.* 531.*)*

(Since the list of New Zealand Algæ was published in this Journal, Vol. 4, p. 521, a small collection, of which the following is a notice, has been received by Sir. Wm. J. Hooker from the Rev. Mr. Colenso.)

---

1. Sargassum plumosum, A. Rich.
   Colenso, No. 644. 886.
2. Sargassum ——— ?
   Colenso, 629. The specimen is insufficient.
3. Marginaria Boryana, Mont.
   Colenso. Two leaves only.
4. Phyllospora quercifolia, Harv.
   Palliser Bay, *Colenso,* No. 631.
5. Carpophyllum Maschalocarpus, Hook. fil. et Harv.
   Colenso, 643. 887. 888.
6. Blossevillea retorta, Mont.
   Colenso, 646.
7. Carpomitra Cabreræ! Kütz.—Harv. Phyc. Brit. t. 14.
   Colenso, 636.—This is identical with European specimens, and its discovery at New Zealand throws some doubt on our *C. Haliseris,* which differs, chiefly, in having a much broader frond.
8. Zonaria flava, Ag.
   Colenso, 890.
9. Epineuron Colensoi, Hook. fil. et Harv.—Harv. Ner. Austr. p. 26. t. 10.
   Colenso, 637. Magnificent specimens, a foot long.
10. Polysiphonia aterrima, Hook. fil. et Harv. Parasitical on *Phyll. quercifolia.* *Colenso,* 634.

11. Laurencia filiformis, H. and H. (n. sp.) Caule elato filiformi setaceo flexuoso pinnatim ramosissimo, ramis alternis longis virgatis simplicibus iterumve ramosis, ramulis horizontalibus alternis secundisve brevibus elongatisque cylindricis capitatis.

Hawkes Bay, *Colenso,* 650.—Allied to *L. obtusa,* but very slender, with flexuous stems and branches, and alternate or secund ramuli. The ramuli are either a line in length, or drawn out to 6–8 lines or more.

12. Rhodymenia Palmetta, Grev.

Colenso, 645. These specimens are undistinguishable from some European forms in our Herbaria.

13. Rhodymenia ——— ? n. sp. (?) fronde membranacea rosea cuneata dichotoma, laciniis furcatis patentibus lineari-cuneatis, axillis acutis.

Colenso, 877.—An imperfect specimen, perhaps belonging to a new species.

14. Gracilaria? torulosa, H. and H.—Gigartina torulosa, nobis, in Journ. 4. p. 546.

Colenso, 873.—Mr. Colenso's specimens are much more perfect than our former ones. The colour, which had completely faded in the specimen from which we originally described the species, is dark purple, changing to various tints of red in fresh water. The structure of the stem is intermediate in character between that of Gracilaria and Gigartina; the centre being that of the first of these Genera, the circumference that of the latter.

15. Iridæa micans, Bory.

Colenso, 880.

16. Melanthalia abscissa and Jaubertiana.

Colenso, 627. 882.—Splendid specimens, which confirm Dr. Harvey in the opinion already expressed (ante, Vol. 4. p. 548) that the *M. Jaubertiana* is not distinct from the original *abscissa* of Turner.

17. Gelidium lucidum, Harv.

Colenso, 647. 649. 877. 879. 884.

18. Ctenodus Billardieri, Kütz.

Colenso, 874. 891.

19. Griffithsia setacea, Ag.
Colenso, 633,

20. Ptilota formosissima, Mont.
Colenso, 632. 638. 875. 889.

21. Ceramium *virgatum,* Hook. fil. and Harv. (n. sp.) Filis strictissimis virgatis indivisis ramosisve ramis similibus, ramulis dichotome multifidis appressis axillis, angustissimis apicibus incurvis, articulis concoloribus glabris ramorum diametro equalibus ramulorum brevissimis, favellis subterminalibus involucro polyphyllo suffultis.

Parasitical on *Carp. Maschalocarpus,* Colenso, 881. The exceeding straightness of the stem and branches, and the appressed ramuli, well distinguish this species.

HERBARIUM *and* LIBRARY *of the late* DR. THOMAS TAYLOR.

The Herbarium comprises 8138 sheets (the number of species being something less) with an average of 4 specimens on each sheet, and for the convenience of purchasers it will be disposed of in families; viz.—

Filices (= 123 sheets.)
Musci (= 2306 sh.)
Hepaticæ (= 2168 sh.)
Musci and *Hepaticæ,* unarranged, (= 332 sh.)
Lichenes (= 2251 sh.)
Algæ (= 681 sh.)
Fungi (= 277 sh.)

The *Musci, Hepaticæ* and *Lichenes* are mounted on sheets 9½ by 6 inches. They include nearly every known species, with several hitherto unpublished, and are rich in contributions from the most celebrated cryptogamists and travellers of the present century; besides comprising original specimens of the species described by their late eminent possessor in the Muscologia Britannica, Flora Hibernica, Flora Antarctica, &c. The *Algæ* contain an interesting collection made by the late Miss Hutchins. The whole is illustrated by numerous magnified drawings and manuscript observations.

There are, besides, several parcels of duplicate specimens, an unarranged collection of flowering plants and Ferns, and fine copies of Drummond's Musci Americani, Funck's Deutschlands Moose, Spruce's Musci Pyrenaici and Hepaticæ Pyrenaicæ, Drummond's (Js.) Swan River Mosses, Mc. Ivor's British Hepaticæ, &c.

The Library includes many valuable works, chiefly on Cryptogamic Botany.

NOTICES OF BOOKS.

Works of the late William Griffith, Esq. F. L. S. &c. Posthumous Papers, bequeathed to the Hon. the East India Company, and printed by order of the Government of Bengal; viz.—

1. Journals of Travels in Assam, Burma, Bootan, Affghanistan, and the neighbouring countries. Vol. I. 8vo. Calcutta, 1847.
2. Icones Plantarum Asiaticarum. Part I. Development of Organs of Phanerogamous Plants. 4to. Calcutta, 1847, Plates.
3. Notulæ ad Plantas Asiaticas. Part I. Development of Organs of Phanerogamous Plants. 1 vol. 8vo.

The whole arranged by John M'Lelland Esq., F. L. S., Surgeon, Bengal Service.

It is well known to every reader of this Journal, that Mr. Griffith was one of the most promising Naturalists that ever visited our Indian territories. During his brief career in those regions, he was indefatigable in collecting, drawing, and describing; and his vast collections, drawings, descriptions, and journals were bequeathed to the Honourable the Directors of the East India Company, with a firm hope that this distinguished body, which had already rendered such services to science and in particular to Botany by their liberal and judicious distribution of the vast collections formed by Dr. Wallich, Dr. Roxburgh, &c., and by the powerful assistance they gave towards the publication of the discoveries of those eminent Botanists, would not be tardy in affording publicity to the collection. Nor was this a vain expectation. We have now before us the first volume of the Journals, the first Part of the Icones, and the first Part of the Notulæ; all and each displaying the varied knowledge and untiring activity of the Author.

Mr. M'Lelland has been charged with the publication of all the MSS. and drawings at Calcutta; and we think he has done well in giving them to the world in the state in which Mr. Griffith left them. Doubtless, had the latter lived to publish them, they would have appeared under a very different aspect;—but it might have been difficult, even in Europe, to find an editor competent to carry out *fully* the author's views. The works must now be considered as merely his *private notes*, the results of his own daily observations and fac-similes of the contents of his portfolio:—all destined for his own immediate advancement in his favourite science, and from which, had Providence prolonged his life, he would have selected what he deemed fit for the information of the scientific world.

It is as a physiological botanist that Mr. Griffith shone pre-eminently; and he has given ample proof of his deep research into the anatomy and physiology of plants in the volume of plates above alluded to, and in the "Notulæ" which are explanatory of the plates and of his views of the organization, metamorphoses, &c., of vegetables. The first part alone of the Icones contains 62 large quarto plates, crowded with more or less highly magnified figures and analyses of the parts of the flower, fruit, &c. These are executed in the same bold and rather rude, but faithful, manner, for which the elder Richard was distinguished, and which are here copied on stone we presume by native artists.

When the work is completed, and we believe it will extend to many volumes, it will be seen that hardly any naturalist, though privileged to attain a much greater age, has done more to advance the cause of Systematic, and especially Physiological, Botany than Mr. Griffith. The public is greatly indebted to Mr. M'Clelland, for the pains he has bestowed on the preparation of the Journals, &c., for the press: the labour of which must be of no ordinary kind; and by performing which he has only fulfilled a sacred duty, imposed upon him by Griffith himself in his dying hour.

The vol. of the Journals is illustrated by a portrait of the author, and by several well executed views of the country, which are lithographed by his sister in Europe, and add considerably to the interest of the volume.

Even were this the place for it, we could not attempt an analysis of these works. They are for attentive reading and study, and should be found in the hands of every botanist, but particularly in those of every student of Indian Botany.

The following information, on the subject of Griffith's MSS. and drawings, may not prove uninteresting. It is communicated from Calcutta, by one well competent to judge.

"Mr. M'Clelland is here, engaged in the arduous duty of editing poor Griffith's journals, botanical drawings, and descriptive matter. The expences of the publication are nobly defrayed by the E. I. Company, who take 250 copies; and the proceeds from the sale of the remainder are generously put aside, by Mr. M'Clelland, for the benefit of Mr. Griffith's orphan boy. The materials are left in admirable order, and are so copious, and many of the drawings so well executed, that I am perfectly amazed at their author's ability. His exertions were all but superhuman; and he was a far better artist than I had imagined: the handwriting is good, and the references to all his plates correct, down to the smallest detail. Mr. M'Clelland is printing Griffith's notes, just as they were left, and lithographing fac-similes of the drawings, which I have examined and found quite accurate, for where the lithographer has made unintelligible work, the original is the same.

"The East India Company proposes to distribute the 250 copies at home, so giving every one the opportunity of working up Griffith's materials. The drawings are however of unequal merit, for they were chronologically arranged, from 1833 to 1845, and all are copied.

"The portion first published contains Griffith's Travels and Journal; but I find no trace of explanatory notes upon various Indian names and terms, or chart or map of his solitary wanderings through regions previously laid down in no map. This latter is a serious deficiency. The Journals are rough, but full of materials which would have formed a glorious book in the author's own hands. This part is complete, in an 8vo. vol., of about 500 pages, price 32*s*. The first Botanical part is purely physiological: it is a large 4to. vol., containing 62 coloured plates, crowded with figures and accompanied by an 8vo. vol. of descriptive matter of 250 pages. The *Mosses* are all extremely well drawn, dissected, and described, with MS. names: they, together with the *Hepaticæ*, will constitute a second Part, of about 50 plates and about 100 pages of letter-press. The *Grasses* and *Cyperaceæ* are to form a third Part, the plates similarly in 4to., and the descriptions 8vo.; while the remaining *Phanerogamæ* compose the 4th Part. This last consists of excellent delineations of new, curious, or beautiful plants, well drawn by Griffith's own hand, and some are well coloured too.

"There is no MS. of *Ferns*: the specimens of this Tribe I understand were bequeathed to you. It seems to me that, now Mr. M'Clelland has performed the first and most difficult Botanical Part, and done it well (so far as accurately rendering the original drawings and notes), and thus ensured the gratis distribution of the book to 250 botanists, and also arranged that a fund should be raised for the deceased author's child, it were a pity he should not carry the work to its conclusion. Nobody can read Griffith's handwriting with equal facility, or copy the notes with such care and patience. Mr. M'Clelland is also busy arranging the collections for distribution, and lithographing with his own hand a Wallichian Catalogue, not only of the Numbers, Names and Stations, but of the botanical remarks and often detailed characters attached to each species; and this will be distributed with the specimens."

Journal of an Expedition into the interior of TROPICAL AUSTRALIA, *in search of the Gulf of Carpentaria; by* LT. COL. SIR THOMAS L. MITCHELL, KT. D. C. L. Surveyor General of New South Wales. 1 vol. London, 1848.

There is in this volume a valuable contribution to Australian Botany, given in such a way as not to trouble the reader of the more popular "Journal" with the dry details of Natural History. During the important survey a very considerable collection of plants was made by Sir Thomas Mitchell and his assistants. They were all numbered according to the locality, and corresponding numbers were kept in the Journal. The specimens, previous to the appearance of the volume of travels, were consigned to Messrs. Bentham, Hooker, Lindley, and De Vriese; and such as were deemed new, or otherwise worthy of notice, were named and characterized in a brief phrase, of which the generic name alone appears in the body of the work, while the specific name and character and any short remark to assist in the identity are given in a note, which may be passed over or not, as the reader thinks proper. Then at the end of the volume is an Index of all the plants noticed in the work, arranged according to the natural orders, with a reference to the page of the work.

One of the most remarkable plants here described is a new Sterculiaceous Genus, *Delabechea rupestris*, Lindl., of which a figure is given. Its trunk bulges out like a barrel; or rather, judging from the figure, it is shaped like a turnip, with the branches springing directly from the top, yet it constitutes a tree, "arbor grandis, trunco in dolii speciem intumescente."

While many of the plants in this collection prove to be undescribed species, it is but justice to the late Mr. Allan Cunningham to say that a large portion of them exist in his collection, which, it is to be regretted, he did not live to publish.

Although scarcely bearing on botany, except as exhibiting vegetation *en masse*, we cannot help expressing our satisfaction at the beautiful execution of the views of landscape scenery.

Prodromus Monographiæ FICUUM; *scripsit* F. A. G. MIQUEL, Botanices Professor Amstelodamensis.

(*Continued from page* 442.)

§ 7. *Trematosycea.* *Folia* oblonga integerrima, villosa, vel pubescentia vel glabra; *receptacula* axillaria vel ad axillas defoliatas conglomerata, sessilia vel breviter pedunculata, globosa vel basi in stipitem constricta, tribracteata, parva, hirta vel glabriuscula, ore margine elevato subcrenulato cincta, serius in ejus fundo bracteata. *Flores* 3–4-phylli, fusci.

119. *Ficus villosa, Blume in Bijdrag. Fl. Nederl. Ind. p.* 441. (Ficus hirsuta, Hook. Herb.) Ramulis, pedunculis, receptaculis, petiolis, foliisque subtus fulvo-tomentosis; his ovato-oblongis, acuminatis, integerrimis, marginibus præsertim basin versus revolutis, basi rotundatis vel leviter cordatis, 3–5-nerviis et utrinque 5–7-costulatis, subtusque reticulatis, supra lævibus in nervo medio subhirtellis; *receptaculis* breviter pedunculatis, basi in stipitem constrictis.

HAB. *Java* (Blume, Lobb! in Hb. Hook.); *Prince of Wales Island.* (Hb. Hook.)

Petioli 1½, folia 11–18 cent. longa, 5–7 lata.

120. *Ficus villipes,* n. sp. Ramulis junioribus, petiolis, foliisque subtus in nervis molliter appresse villoso-pubescentibus; his modice petiolatis, elliptico-oblongis, obtuso-apiculatis basi æqualitruncatis vel leviter cordatis, marginibus, præsertim versus basin leviter revolutis, integerrimis, tri- vel subquinquenerviis, et utrinque 3–4-costulatis, subtus reticulatis, fusco-pubescentibus, serius glabratis et scabriusculis, supra in nervis parce hirtellis sensim glabrescentibus, mox utrinque pustulatis; receptaculis 2–6-glomeratis, sessilibus, obovatis, glabris, basi bracteis 3 dorso medio strigillosis.

HAB. *Javam.* (Lobb! in Hb. Hook.)

Petioli 1, *folia* 9–14 cent. longa, 5–6 lata.

121. *Ficus Spanogheana,* n. sp. Ramulis junioribus, petiolis, foliisque subtus in nervis appresse villosulo-pubescentibus; his

modice petiolatis, elliptico-oblongis vel subovato-oblongis, breviter obtusiuscule acuminatis, integerrimis, leviter revolutis, basi acuta vel obtusiuscula, 3- vel sub-5-nerviis, et utrinque 3–2-costulatis, subtus reticulatis et fulvescenti-pubescentibus, dein glabratis, supra in nervis parcissime hirtellis; receptaculis 2–6-glomeratis sessilibus, subglobosis, glabris, basi tribracteatis.

HAB. *Java.* (Spanoghe! sub F. villosa in Hb. Hook.;) Zolling. n. 253! (a Moritz. sub *F. obtecta*, Wall.)

Var. fol. ovato-ellipticis (Zolling. n. 766!)

Species abludens.

122. *Ficus lancifolia*, n. sp. Ramulis petiolisque fusco-hirtellis, foliis brevissime petiolatis, lanceatis vel oblongo-lanceolatis, acuminatis, basi inæqualiter cordatis, trinerviis atque costulatis, denticulatis, utrinque scabro-pubescentibus, supraque asperulis; receptaculis axillaribus, sessilibus, conglomeratis, 2–4-globosis, pubescentibus.

HAB. *ins. Philippinas* (Cuming, n. 1944!)

Folia 15–14 cent. longa, 4–3½ lata, membranacea, subnitida.

§ 8. *Kissosycea.* *Folia* integerrima, glabriuscula, coriacea; *receptacula* pedunculata, subglobosa, basi brevi-constricta, tribracteata. *Perigonii* phylla fusca nitida. *Stigma* obliquum.

123. *Ficus scandens, Roxb. Fl. Ind. l. c. p.* 536; *Wight, Icon,* II. *tab.* 643; *F. fruticosa* (Roxb.); *Wall. List. n.* 4501. *haud Roxb.*

HAB. *Silhet* (Roxb.—Wall.!); *Assam* (Hb. Hook.!)

Formam puberulam alioquin haud diversam vidi ex *Assam.*

124. *Ficus fruticosa, Roxb. Fl. Ind. l. c. p.* 533; *Wight, Icon. tab.* 654.

HAB. *Chittagong.* (Roxb.) Num cum præcedenti conjungenda?

125. *Ficus pyrifolia, Burm. Fl. Ind. p.* 226; Vahl Enum. III. p. 187.

HAB. in *India or.*

An hujus loci? Num Urostigma ovoideum, ex Rheedii figura a Burm. citata.

§ 9. *Erythrogyne.* (Erythrogyne *Visian.* in litt. Gasparr. Ricerche, p. 86).

126. *Ficus lutescens,* (Parment.) *Desfont. Cat. ed.* 3, *p.* 413. (F. pisiformis, Hort. Berol. 1846.—Erythrogyne lutescens, Vis. l. c.)

"Glabra; ramis levissime flexuosis, transverse rimulosis; foliis breviter petiolatis, oblongo-lanceolatis, acutis, obsolete trinerviis, integerrimis, nervis primariis remotis costaque subtus prominulis, coriaceo-membranaceis, supra vix nitidulis, subtus subtilissime impresso-punctulatis; gemmis terminalibus conico-acuminatis; receptaculis axillaribus, solitariis et geminis, longe pedunculatis, subpyriformi globosis, pallide aurantiacis, basi trisquamulosis, umbone prominulo, squamulis 5 clauso."

Hab. *Java*? Colit. in hortis.

Folia 2½–3-pollicaria, 1 poll. lata. *Petioli* bilineares. Fl. struct. eximie exposuit cl. *Vissiani* l. c.—Num rectius ad Pogonotrophes genus?

§ 10. *Thamnosycea.* *Folia* integerrima, glabra, costivenia. *Recept.* pedunculata, globosa, basi bracteis 3 subconnatis, monoica. *Perigonii* fusci *phylla* 4–3. *Fem. ovarium* sessile; *stylo* brevi, deciduo; *stigmate* simplici, clavato-capitellato, colorato. *Masc. stamina* 2, *filamentis* brevissimis, *antheris* oblongo-linearibus, utrinque emarginatis, bilocularibus, loculis appositis.

(Pharmacosyceæ inter Americanas et Ficus sect. Podosyce quoad flores affinis.)

127. *Ficus nemoralis, Wall. List. n,* 4517. Foliis breviuscule petiolatis, oblongis vel ellipticis, æquilateris, longiuscule anguste acuminatis, basi rotundatis, integerrimis, subcoriaceis, subtus pallidis, glabris, venis patulis utrinque prominulis, utrinque 10–15; receptaculis ad axillas defoliatas, solitariis vel geminis, pedunculatis, lævibus, glabris.

Hab. *Nepaliam* (Wall!); *Himalaya* (Lady Dalhousie!)

Petioli 1–1½, *folia* 11–16 cent. longa, 4½–6 lata. *Pedunculi* 5–10 mm.; *receptacula* obovato-globosa.

128. *Ficus densa,* n. sp. Glabra; foliis modice petiolatis ad

ramorum apices confertis, oblongo-lanceolatis lanceolatisque, longe suboblique et acute acuminatis, integerrimis membranaceis, venulis utrinque 6–10 tenuibus, patulis, versus margines adscendentibus vix prominulis; receptaculis ad axillas defoliatis, solitariis vel geminis, pedunculatis, obovatis vel ellipsoideis basi involucri tripartita.

HAB. *Rynee–Ral, Indiæ borealis.* (Dr. Thomson in Hb. Hook.)

Rami subteretes foliorum cicatricibus sæpe valde confertis tuberculati. *Petioli* 1½–1 cent. longi, colorati. *Folia* 8–11 cent. longa, 2–4 lata, subtus pallida. *Stipulæ* 1½ cent. longæ, lineari-lanceolatæ, glabræ, membranaceæ, caducæ. *Receptacula* piso paulò majora, pariete ut in præcedente tenui; *pedunculi* 4 mm. longi.

§ 11. *Leiosycea.* *Folia* alterna, oblonga, integerrima, costivenia, coriacea, glabra. *Receptacula* gemina, pedunculata, globosa, basi brevi-stipitata, tribracteata. *Flores dimorphi*, bracteolati; *majores* tuberculis insidentes; *minores* foveis. *Perigonia* 4-phylla, fusca; *stigmata* majorum bicrura, minorum simplicia. *Masc.* nondum observati.

129. *Ficus vasculosa, Wall. List. n.* 4482. Adulta glabra; foliis modice petiolatis, ellipticis vel oblongis, attenuato-obtusis vel rotundatis, basi acutis integerrimis, nervo medio infra apicem delitescente, costulis venosis utrinque 8–10 aliisque tenuibus ante marginem junctis, subtusque reticulatis; receptaculis axillaribus geminis pedunculatis obovato-globosis, ore arcte occlusis, basi in stipitem brevem abrupte constrictis, bracteis 3, parvis, deciduis.

HAB. *Tavoy, Penang.* (Wall!)

Petioli 1–1½, *folia* 8–11 cent. longa, 4–4½ lata. *Receptacula* piso majora.

§ 12. *Didymophora.* *Folia* alterna, oblonga, integerrima, glabra; *receptacula* sessilia, urceolata, basi tribracteata. *Flores* monoici, ebracteolati, mixti, *masc.* longe pedicellati, *perigonio* triphyllo, fusco. *Stamina* 2, monadelpha, *antheris* ovatis bilocularibus. *Fem.* brevius pedicellati, *perigonio* consimili. *Stylus* brevis, *stigmate* bicruri.—Rectius fortassis genus proprium.

130. *Ficus gemella, Wall. List. n.* 4576. Glabra; foliis mo-

dice petiolatis, oblongis, vel lanceolato-oblongis, longe acuminatis, inæquilateris vel æquilateris, basi acutis, integerrimis vel vix repandulis, subcoriaceis, glabris, costulis utrinque 8–12; receptaculis solitariis vel geminis, ad axillas defoliatas sessilibus, basi tribracteatis, obovato-cuneatis, glabris, intus tuberculatis.

HAB. *Ind. or.* (Wall.!)

Petioli ½–1, folia 10–16 cent. longa, 3–6 lata. *Receptacula* 1–1½ cent. longa, ore constricto, subannulatim marginato, *bracteis* numerosis, prominulis repleto.

§ 13. *Eriosycea.* *Folia* alterna, longe vel breviter petiolata, serrata, integra, vel lobata, vulgo serrata, hirta vel præsertim subtus tomentosa aut pubescentia. *Receptacula* axillaria, sessilia vel brevissime pedunculata, glabra vel hirta, gemina, intus bracteolata vel et pilosula. *Fl. sessiles* vel *pedicellati*, plerumque *tetraphylli*, *phyllis* fuscis, angustis vel latioribus, et tunc concavis. *Stamina* 2 vel 1 cum alterius rudimento, vel 1 cum ovario nano. *Stigma* obliquum tubuloso-truncatum vel cochleariforme. *Achænia* lenticulari-ellipsoidea vel globosa, lævia, verrucosa, pericarpio delitescenti, *testa* dura.

Species *Asiæ australis* vel *sub-temperatæ.*

131. *Ficus gossypina, Wall. List. n.* 4488. Foliis longe petiolatis, ellipticis, ovatis, acutis vel breviter acuminatis, serratis, integris vel trilobis vel quinquelobis, et tunc basi leviter cordatis, supra petiolis ramulisque pilis sparsis glabrescentibus, subtus præcipue nervum costasque albido-lanatis; receptaculis globosis glabris brevissime pedunculatis, basi bracteis 3, parvis, puberulis, suffultis.

A. *Forma integrifolia.*

HAB. *Penang, Singapur,* et *Pulo Dinding* (Wall.!); *Prince of Wales Island,* (Hb. Hook.! "F. bicolor.")

Caules læves, glabri. *Petioli* 4–10 cent. longi, fuscescentes. *Folia* 10–26 cent. longa, 4–15 lata, membranacea, dentato-serrata, trinervia, costulisque utrinque 3–4!

B. *Forma lobata.*

HAB. *Prince of Wales Island.* (Hb. Hook.! "F. bicolor.")

132. *Ficus Roxburghii.* (F. hirsuta, Roxb. Fl. Ind. III. p. 528, haud Schott.; Wight, Icon, tab. 670.—F. hirta, Roxb. l. c. p. 531; Wight, Icon. tab. 672, [bona, excepta florum analysi,] haud Vahl.—F. hispida, Roxb. MSS. teste Wall., haud Linn. fil. —F. triloba, Hb. Ham.; Wall. n. 4491.) Ramulis, petiolis, receptaculisque fulvo hirtis; foliis modice petiolatis ovato-rotundatis, subcordatis, subacuminatis, serratis, ciliatis, supra substrigosis, subtus incano-tomentoso, tri-5-nerviis costulatisque, integris vel trilobis; receptaculis geminis, sessilibus, ovato-urceolatis.

HAB. *Silhet* (Roxb. Wall.!), *Assam* (Hb. Hook.!), *Goalpara* (Ham.)

Observ. F. *hirta* et *hirsuta* Roxb. non nisi fol. lobatis vel integris diversæ, omnino consociandæ videntur.

133. *Ficus hirta,* Vahl, Enum. II. p. 201. (*F. setosa, Hook. et Arn.* Beech.) Ramulis, receptaculis, petiolis, foliisque subtus hirtis, his breviter petiolatis, oblongis vel obovato-oblongis, acute vel submucronato-acuminatis, indivisis trilobisque, basi leviter cordatis vel truncatis, serratis, ciliatisque, trinerviis et utrinque 4–6-costulatis; receptaculis axillaribus globosis, sessilibus, lutescenti-setoso-hispidis.

HAB. in *China* (Incarville apud Vahl, Barclay in Hb. Hook.)

Sp. Hb. cit. integrifolia. *Petioli* $\frac{1}{2}$–1, *folia* 10–14 cent. longa, 4$\frac{1}{2}$–6 supra medium lata, membranacea, supra sparse setulosa, pilosa. *Receptacula* juniora piso paullo majora

134. *Ficus setosa, Blume in Bijdrag. Fl. Med. Indiæ, p,* 477. (F. setifera, Steud. Nomencl.) Ramulis petiolis receptaculis foliisque subtus in nervis hispidulo-setosis, his breviter petiolatis e basi truncata vel leviter concava, subpanduræformi-oblongis et supra medium trilobis, serratis, supra setuloso-scabriusculis, subtus molliter pubescentibus; receptaculis axillaribus, globosis, setosis; basi 3-bracteatis, vel bracteis glabriusculis, occlusis.

HAB. *Javam* (Blume, Zolling., n. 208!)

Petioli $\frac{1}{2}$–1, *folia* 12–14 cent. longa, alia integra, lateribus panduræformi-sinuata, pleraque vero simul triloba, lobo medio lateralibus duplo longiore atque latiore.

Hujus loci verisimiliter *F. hirtæ specimen* e *Java,* a *Vahlio* commemoratum.

135. *Ficus Reinwardti, Link et Otto, Icon. Rar.* I. *p.* 6. *tab.* 31. (F. fulva, Reinw. in Blum. Bijdr. p. 478 haud Sprengel.)

HAB. *Javam.* (Blum. in Zoll. n. 651 !)

Forma integrifolia adest, verisimiliter species distincta.

136. *Ficus Malabarica,* n. sp. Ramulis, petiolis, foliisque utrinque in nervis primariis appresse subsericeo-hirtellis; foliis breviter petiolatis, supra medium trilobis, basi attenuatis vel acuto-integerrimis, lobis sinu lato diremtis, obtusiuscule acuminatis, integerrimis vel serrulatis, coriaceis supra lævibus, nitidis, subtus pallidioribus, subscabriuscule pubescentibus, utrinque 10–12-costulatis, stipulis elongato-lanceolatis, dorso sericeo-villosis; receptaculis axillaribus, sessilibus, globosis, pubescentibus, basi tribracteatis.

HAB. *Malabariam,* Courtallum. (Wight in Hb. Arnott.)

Folia 20–30 cent. longa, coriacea, lobo medio latissimo. *Petioli* 1–1½ cent. longi; *receptacula* cerasi magn.

Observ. E præcedentium affinitate videtur *Leukosyke Javanica Moritzi System. Verzeichniss der von H. Zollinger in Java ges. Pflanzen,* p. 76, cujus characteres eo loco conferendi.—Num stigma *sessile* dictum revera tale?

HAB. in *Java* (Zoll. n. 692, a me non visum).

Species quoad sectionem dubiæ,

a me nondum visæ.

137. *Ficus cornifolia, Kth. et Bouch. in Ind. Sem. Hort. Berol.* 1846, *p.* 19. (F. javanica, Blume in H. Berol. 1844; F. coarctata, H. Berol.) "Glabra; ramulis rectiusculis, subtrigonis; foliis longiuscule petiolatis, obovato-oblongis, acuminatis, basi rotundatis, leviter cordatis, trinerviis, integerrimis, nervis primariis remotis costaque subtus prominentibus, membranaceis, pellucido-punctulatis et reticulatis, supra satiate viridibus opacis, subtus lætioribus; gemmis terminalibus conico-subulatis rectis; receptaculis axillaribus solitariis longe pedunculatis subglobosis."

HAB. *Java?*

"*Folia* 6¼–6½ pollicaria, 36–38 lin. lata. *Petioli* 1–1¼ pollicares."

138. *Ficus myxæfolia, Kth. et Bouch. l. c. p.* 18. "Ramulis rectis, teretibus, ad nodos sericeo-pilosiusculis; foliis longe petiolatis, subrotundo-ellipticis, apice acutis vel cum basi rotundatis, leviter cordatis, quinquenerviis, integerrimis, nervis primariis remotis, costaque subtus prominentibus, membranaceis, pellucido-punctulatis, supra opacis, glabris, nigro-punctatis, subtus pallidioribus, junioribus ad nervos pilosiusculis; gemmis terminalibus conico-acuminatis, sericeo-pilosis, receptaculis . . . ."

HAB. ——— ?

"*Folia* 7 poll. longa, $5\frac{1}{2}$ lata. *Petioli* $3\frac{1}{4}$ poll."

VI. COVELLIA, *Gasparr. Nov. Gen. p.* 10 (1844). *Ricerche, p.* 85, tab. viii, fig. 36–42. (*Sycomorphe, Miq. in Ann. des Sc. Nat.* 3 *ème Sér. tom. I. Janv.*)

Flores in *receptaculo* turbinato vel subgloboso-turbinato, monoici vel dioici, ebracteolati. *Fem.* nudi vel serius *perigonio* minuto, 3–5-partito instructi. *Ovarium* obovatum vel dimidio-obovatum lenticulari-compressum; *stylo* primum subterminali, dein laterali; *stigmate* tubuloso-infundibuliformi vel oblique truncato. *Masc.* in superiore receptaculi parte infra bracteas pauci, *monandri, perigonio* tripartito

Frutices arboresve Indici, foliis oppositis aut alternis integris, serratis, dentatis vel integerrimis, scabro-pubescentibus vel glabris, in quibusdam deciduis; *receptaculis* pedunculatis axillaribus geminis vel solitariis, sæpe supra ramos aphyllos e trunco vel ad radicem protrusos aphyllos bracteatos rameosis, turbinato-rapiformi-costatis aut fere globoso-turbinatis, basi *bracteis* 3 verticellatis vel irregulariter spiraliter dispositis, similibusque haud raro in pedunculo et receptaculi superficie dispositis; *ore* depresso vel prominente, *bracteis* pluriserialibus imbricatis occlusis, adultiore ætate vulgo superne dilatatis concavatis, perpendiculariter costatis, verrucosis, hispidis, pubescentibus vel glabris, intus sub ore bracteis pluribus arcte imbricatis, cæterum prorsus nudis vel inter flores puberulis; *floribus* (in sicco) fuscescentibus minutis, quandoque oculum fugientibus, densis, ob minutiem receptaculum raro implentibus, sed ejus superficiem internam tantum obducentibus; *stigmatibus* junioribus (lutescentibus) pallidis, ample hiantibus, provectiore ætate extenuatis; *stylis* initio glabris, provectioribus, haud raro patentim pilosis; *achæniis* globosis brunneis, gynophoro longo vel fere nullo sustentis, et nunc receptaculum implentibus, *epicarpio* tenuissimo sicco.

Observ. Generis characteres certi ac faciles; foliorum forma varia, inflorescentia plerumque *Sycomori*, habitus *Ficuum.*

Nomen a me antea datum Gasparriniano postpono, cum hic auctor magis accurate generis characteres exposuerit, et analysibus illustraverit. Attamen adjectis nunc pluribus speciebus characterem genericum ex unica *Ficu oppositifolia* derivatum mutare debui. Cl. Gasp. stigma etiam ætate nimis provecta investigabat.

§ 1. *Folia alterna, basi inæqualia, serrata vel dentata, scabra.*

1. *Covellia Cunia.* (Ficus Cunia, Buch. in Roxb. l. c. p. 561. Wight, Icones, tab. 648. F. conglomerata, Wall. List, n. 4531, partim, haud Roxb.; specimina rec. pedunculatis huc referenda.)

Hab. *Nepal* (Buchan. l. c.); *Raymul, Nepalia, Toong Dang, Moolmyne* et ad rupes *Phanæ* (Wall.! partim ad Seq.); *Bengalia* et ex *Horto Calcutt.* (Hb. Hook.)

Stigma in icone citata haud accurate pictum.

2. *Covellia conglomerata.* (F. conglomerata, Roxb. Fl. Ind. l. c. p. 559. Wight, Icon. tab. 669. Wallich, l. c. partim.)

Dignoscitur, præter alia, foliis brevioribus et recept. sessilibus a præcedenti.

Hab. *Chittagong.* (Roxb.—partim huc loci nat. ad præced. ex Wall. laudati.)

3. *Covellia inæqualiloba*, n. sp. Foliis basi valde inæquali semicordatis lanceolatis attenuato-acuminatis, repando-acute-denticulatis, supra asperis (in sicco fuscescentibus), subtus petiolo, ramulis, et nervo medio supra scabro-puberulis, stipulis petiolaribus geminis lanceolatis membranaceis puberulis, deciduis, ...

Hab. *Mergui* (Griffith! Hb. Hook.)

Folia subtus ochracea, 20–24 cent. longa; *petiolus* 1 cent.

Lobus baseos rotundato-quadrangularis, petiolum multo superans. Præcedentibus alioquin adeo similis, ut de genere equidem nullum dubium.

4. *Covellia cyrtophylla.* (F. cyrtophylla, Wall. List. n. 4532.) Scaberrima; foliis alternis breviter petiolatis, oblongis sub-dimidiato-inæquilateris, acuminatis, basi valde inæquali dimidiato-cordatis, repando-dentatis, junioribus sursum subserratis, bi- vel trinerviis et utrinque 3–4-costatis, supra aspero-punctatis, subtus ramulis, petiolis, receptaculisque scaberrime pubescentibus; receptaculis axillaribus, geminis vel supra ramulos subaphyllos, racemosis, pedunculatis, turbinato-globosis.

Hab. *Silhet.* (Wall. l. c.)

Pubescentia et habitu *C. oppositifoliam* et *C. scabram* æmulat. *Receptacula* basi *bracteis* 3 fugacibus, parvis, puberulis et circa orificium subpervium, bracteis exiguis pubescentibus obvallata. *Flores* prorsus nudi, *feminei*; *ovarium* gynophoro sustentum dimidiatum compressum fuscum, *stylo* brevi, *stigmate* tubuloso-infundibuliformi. Vidi paucos *fl. masc.* in sup. parte receptaculi *tripartitos monandros* inter bracteas supremas latentes.

5. *Covellia dasycaula.* F. obscura, Blume, Bydrag. p. — teste Moritzi ad Zolling. Pl. Jav. exsicc. n. 578). Ramulis petiolisque (aurantiaco-) tomentellis; foliis alternis oblongis, acuminatis vel obtusatis, haud valde inæquilateris, basi inæquali subcordatis, subdentato-serratis, trinerviis et utrinque 7-costulatis et molliter pubescentibus, supra asperis inque nervis pilosulis; receptaculis (axillaribus) pedunculatis, turbinato-globosis in stipitem constrictis, pubescentibus.

Hab. *Javam* (Zoll. ! in Hb. Hook.)

Rami læves, glabri. *Petioli* ½ cent. longi. *Folia* 16–20 cent. longa, 7–8½ lata, acumine et serraturis ætate deliquescentibus obtusata et fere integerrima, basi haud valde inæqualia. *Pedunculi* 1–2 cent. longi; *receptacula* juniora ima basi minute bracteata, magnitudine nuclei cerasorum.

6. *Covellia Zollingeriana,* n. sp. (haud F. coronata, Reinw.—Bl.—ut opinatur cl. Moritzi, l. c. ad n. 532* qui male etiam F. cyrtophyllam, Wall. huc ducit). Ramulis foliisque subtus in ner-

vis sparse, receptaculis et petiolis paullò densius pubescentibus; foliis membranaceis, supra sublævibus, nascentibus rarissimis pilis inspersis, inæquilateris, oblongis abrupte angusteque acuminatis, basi oblique rotundatis, repando-denticulatis, versus basin subintegerrimis, trinerviis vel nervo in latere majore accedente 4-nerviis, et utrinque 5–6-costulatis; receptaculis axillaribus solitariis obovato-turbinatis glabrescentibus.

Hab. *Javam* (Zolling.! l. c.)

Petioli ½–1 cent.; *folia* 22–25 cent. longa. *Flores* prorsus nudi, feminei.

7. *Covellia Barclayana*, n. sp. Petiolis, pedunculis, receptaculis junioribus pilis teneris fugacibus inspersis; foliis alternis breviter petiolatis inæquilatero-ellipticis, attenuato-subacuminatis; acumine lato obtuso, basi inæquali subcordatis, denticulato-repandis, trinerviis et utrinque circiter 5-venuloso-costulatis, supra glabris lævibus, subtus pallidis sublævibus rarissimis hic illic pilis inspersis; receptaculis axillaribus (solitariis) pedunculatis ovatis dein globosis, basi nudis, bracteis parvis supra pedunculum sparsis. (Tab. VII. *B.*)

Hab. *Nukalan*, Feejee Islands. (Barclay! in Hb. Hook. "Ficus aspera," Forst., quæ diversa.)

Flores feminei prorsus nudi. *Stylus* patentim pilosus, longus.

Tab. VII. *B.* *Covellia Barclayana*, n. m. *a—e*, pistilla varia diversæ ætatis.

§ 2. *Folia opposita, scabra, serrata, vel dentata.*

* *Omnia opposita.*

8. *Covellia oppositifolia*, *Gasp. l. c. p.* 85. (Sycomorphe, Roxburghii Miq. l. c. F. oppositifolia, Willd. sp. IV. p. 1151. Roxb. Coromand. II. n. 124. Flor. Ind. l. c. p. 561. Wight, Icon. tab. 638. F. scabra (?), Jacq. —— ? F. toxicaria, Hb. Madr.)

Hab. in *Ind. or. contin.* ad rivulos et locis humidis, circa *Calcuttam* (Roxb.); variis locis *Bengaliæ* (Hb. Hook.!)

Folia subtus in axillis glandulosa, magnitudine forma et indumento valde variant.

9. *Covellia hispida.* (F. hispida, Linn. fil. Suppl. p. 442; Thunb. Fic. n. 24; Vahl, Enum. II. p. 198.) Ramis glabriusculis, foliis breviter petiolatis oblongis brevi-acuminatis, basi leviter excisis vel subcordatis, quandoque repando-serrulatis, trinerviis et utrinque 4–5-costatis, supra asperulis, subtus pellucidis scabro-puberulis; receptaculis axillaribus et racemosis, villoso-hispidis, basi tribracteatis.

Hab. *Java* (Thunb. l. c. Zolling. n. 280!)

Immerito a plerisque auctoribus cum *C. oppositifolia* conjuncta; foliis subtus tantum puberulis; receptaculis ipsaque florum structura distinguenda.

10. *Covellia setulosa,* n. sp. Ramulis, petiolis junioribus, nervoque medio subtus setulis fuscis nitidis appressis instructis; foliis oppositis modice petiolatis oblongis anguste acuminatis subæquilateris basi æquali leviter emarginatis versus eam leviter attenuatis integerrimis, sursum repando-serrulatis, serius integerrimis, submembranaceis, supra nitidis præter nervum medium glabris, subtus scabriuscule puberulis ad lentem punctatis, trinerviis costulisque utrinque circiter 6; receptaculis ad ramos aphyllos oppositos solitariis et geminis ex axillis bractearum triangulari-lanceolatarum, dorso hirtellarum, pedunculis globosis, basi tribracteatis, pubescentibus, ætate glabratis, floribus nudis.

Hab. *Ind. or.* (Wight, n. 17!)

Petioli $1\frac{1}{2}$–$\frac{1}{2}$, *folia* 18–19 cent. longa, $6\frac{1}{2}$–$7\frac{1}{2}$ lata.

11. *Covellia dæmonum.* (F. dæmona, Kœnig MSS. in Roxb. Fl. Ind. l. c. p. 462. Wight, Icon. II. tab. 641. Ficus ——— Dæmonum, Vahl, Enum. II. p. 198 vix Roth.) Ramulis, petiolis, foliisque subtus in nervis, supra parce setuloso-hirtellis; foliis oppositis elliptico- vel subobovato-oblongis, acuminatis, æquilateris, basi obtusiusculis, obtuse dentatis 3-nerviis et utrinque 3–4-costulatis, demum scabriusculis subtus ad lentem punctatis. (Sec. sp. Wight.)

Hab. *Tanjore,* locis maritimis (Roxb.); *ibid.* (Wight! 1836, 943.) Species hæc cum icone cit. melius quam cum Roxb. descriptione congruit. C. hispidæ accedit.

Petioli 2 cent., *folia* 16–18 cent. longa, membranacea.

Ejusdem forma major; foliis 28 cent. longis; receptaculis subglobosis pubescentibus.

Hab. *Courtallum*, (Wight! Hb. Arnott).

Observ. Ad hanc vel sequentem *F. Goolereea*, Roxb. l. c. p. 538, paucis verbis tantum descripta accedere videtur.

12. *Covellia Courtallensis*, n. sp. Ramulis, petiolis, foliisque subtus in nervis pilis fuscis setulosis nitidis appressissimis sericeohirtellis; foliis oppositis ovato- vel elliptico-oblongis, acutis (?), basi leviter cordatis, æquilateris, apice serrulatis vel integerrimis, trinerviis costulisque utrinque 3–4 patule adscendentibus, crebroreticulatis, subscabro-pubescentibus, sub pilorum insertione elevato-punctatis, supra nitidis glabris; ramis receptaculiferis nudis, elongatis, (terræ immersis,) racemosis, ramulis quasi dentato-annulatis; receptaculis breviter pedunculatis turbinatis, pubescentibus.

Hab. *Courtallum*, (Wight, n. 944!)

Species spectabilis. *Folia* 25 cent.—Huc forsan *Perin Teregam*, *Rheede Mal. III. tab.* 61; nisi folia in icone alterna picta essent.

13. *Covellia Wightiana*, n. sp. Ramulis fistulosis, petiolis foliisque, subtus in nervis primariis pilis setulosis basi tumidulis, appressis, subhirtellis; foliis oppositis, longe petiolatis (petiolis cujusvis jugi inæqualibus), ovato-oblongis, ovatisque acuminatis æquilateris, basi rotundatis, trinerviis et utrinque 4–5-costulatis, subtus reticulatis, serrulato-denticulatis, membranaceis, supra raris setulis inspersis sublævibus; receptaculis axillaribus vel supra ramulos subaphyllos dispositis subglobosis, pedunculatis, basi nudis vel irregulariter bracteatis puberulis.

Hab. *Ind. or.* (Wight! l. c.)

Prope *C. Courtallensem*. *Petioli* 5–13, *folia* 25–32 cent. longa. *Flores* fem. nudi.

* *Folia opposita et simul alterna.*

14. *Covellia congesta*. (F. congesta, Roxb. l. c. p. 560. Wight, Icon. t. 644. Wallich List, n. 4510. Sycocarpi sp. mihi olim l. c. Stigma a Roxb. male sessile dictum.)

Hab. in *Amboina*, in *H. Calcutt.* introducta.

15. *Covellia Volkameriæfolia.* F. Volkameriæfolia, Wall. n. 4542. F. cuneifolia, Hook. Herb.) Glabriuscula; foliis oppositis et alternis modice petiolatis, subcoriaceis, subovato- vel lanceolato-oblongis acuminatis vel acutis, versus basin attenuatis, utrinque 6–8-costatis, subtus fugaci-puberulis, supra in nervo medio subhirtellis, stipulis lanceolatis carinatis, glabris; receptaculis axillaribus subsessilibus, basi bracteatis subgloboso-turbinatis, vertice depressis, intus sub ore bracteatis, cæterum nudis.

HAB. *Penang.* (Wall. l. c!)

Præcedenti similis. *Petioli* 1–1½, *folia* 12–18 cent. longa.

Tab. VIII. *A. Covellia Volkameriæfolia,* cum recept. *a.* n. m.; *b,* fl. fem. cum 2 nanis appositis; *c, d,* fl. fem. alii sessiles a ventre et latere; *e,* stigma; ommes a. m.

16. *Covellia rapiformis.* (F. rapiformis, Roxb. Fl. Ind. l. c. p. 551. Wight, Icon. tab. 637.)

HAB. *Amboina*; in *H. Calcutt.* introducta.

17. *Covellia Assamica,* n. sp. Ramis petiolis, pedunculis, foliisque præsertim subtus scabro pubescentibus, his modice petiolatis alternis vel superioribus omnibus oppositis lanceolato-oblongis vel sublanceolatis attenuatis, apice ipso acuto vel obtusiusculo, æquilateris, basi acutis, sursum denticulato-repandis vel fere integerrimis, utrinque 5–6-costulatis, subcoriaceis, supra setulis sparsis verruculisque aspero-scabris, subtus pallidis, reticulatis, punctulatis; receptaculis axillaribus pedunculatis, solitariis, subglobosis, obsolete costulatis.

HAB. *Assam.* (Hb. Hook!)

Petioli 1–½, *folia* 7–14 cent. longa.

Observ. F. laminosa, Harder. in Roxb. Fl. Ind. III. p. 531, breviter descripta, omnino *Covelliæ* species videtur, *huic* vel *C. Volkam.* affinis. (Conf. Asiat. Researches, VI. p. 379.)

§ 3. *Folia alterna, latiuscula, æqualia, serrulata, vel dentata.*

18. *Covellia dasycarpa.* Ramulis scabro-puberulis, foliis alternis oblongis vel obovato-oblongis, breviter acuminatis, basi subæquali vel æquali rotundatis vel leviter excisis, obtuse dentatis trinerviis et utrinque 4–5-costulatis, supra sparse scabriuscule pube-

rulis dein asperiusculis, subtus molliter incano-pubescentibus et reticulatis; receptaculis supra ramos breves e basi ramorum protrusos bracteisque latis vel lanceolatis, appresse hirtis dense imbricatis, tectos conferte racemosis obovato-turbinatis dense tomentosis basi vulgo minute tribracteatis, pedunculatis.

HAB. "on the trunks of water-courses and other moist soil;" *Ind. orient.* (Hb. Hook! "F. repens.")

Petioli 1–3 cent. longi. *Folia* 10–14 cent. longa, 5–8 lata; glandula viridis subtus hic illic in axillis. *Receptacula* cerasi magnitudine, fere uti in *C. oppositifolia*, ore bracteis obvallato. *Flores nudi*; alii basi *perigonii rudimento* instructi. *Stylus* fere nullus, *stigmate* tubuloso-hiante. *Achænia* pedicellata, globosa, fusca, nitida.

19. *Covellia macrophylla.* (F. macrophylla, Roxb. l. c. p. 556. Wight, Icon. tab. 673; haud alior. auct.; F. Roxburghii, Wall. cat.)

HAB. *Nepaliam, Silhet, Chittagong*; v. s. ex H. Calcutt.

20. *Covellia racemifera.* (F. racemifera, Roxb. l. c. p. 560. Wight, Icon. tab. 639.)

HAB. in *Sumatra*, in *H. Calcutt.* introducta.

§ 4. *Folia alterna, angusta*; *receptacula sæpe racemosa.*

* *Hæc turbinata.*

21. *Covellia glomerata.* F. glomerata, Willd. Sp. IV. p. 1148. Roxb. Pl. Coromand. II. tab. 123. Flor. Ind. l. c. p. 558. Wight, Icon. tab. 667.)

HAB. locis humidis *Indiæ orient.* (Roxb.—Wight.)

22. *Covellia lanceolata.* (F. lanceolata. *Buch.* in Roxb. l. c. p. 557. Wight, Icon. tab. 645.)

HAB. *Chittagong* (Dr. Buchanan, l. c.); *Ind. orient* (Abel! in Hb. Hook.)

23. *Covellia prostrata.* (F. prostrata, Wall. List, n. 4536.) Glabra; foliis lanceolatis vel lanceolato-oblongis, acute longiuscule acuminatis membranaceis, integerrimis, utrinque circiter 10-costulatis, versus basin subinæquilateris, subtus fuscescentibus; recep-

taculis supra ramulos aphyllos racemosis, geminis, pedunculatis, ex axillis bractearum lanceolatarum, basi bracteis 3 concavo-carinatis.

HAB. *Goalpara* (Wall.!); in *Bengalia* (Hb. Hook.!)

Petioli 1–2, *folia* 14–18 cent. longa. *Perigonium* fl. fem. distinctum.

** *Receptacula subglobosa, lævia.*

24. *Covellia cuneata*, n. sp. Ramis, petiolis, inflorescentia, receptaculis, foliisque subtus in nervis appresse puberulo-hirtellis, glabrescentibus; foliis breviter petiolatis, obovato- vel rhombeo-oblongis acuminatis, basi cuneatis, præsertim sursum crenulato-repandis, trinerviis et utrinque circiter 5-venosis; receptaculis supra ramulos aphyllos paniculatis globoso-turbinatis, basi bracteis, 3 ellipticis dense pilosis, suffultis, intus dense setulosis.

HAB. Ins. *Philippinas.* (Cuming, n. 1938!)

TAB. VIII. *B.* *C. cuneata*, ramulus cum infl. *a*, n. m.; *b*, fl. masc. cum perigonio; *c*, stamen; *d*, fl. fem. nudi; omnes a. m.

25. *Covellia microcarpa*, n. sp. Foliis breviter petiolatis, oblongo-lanceolatis, longiuscule acuminatis, basi cuneatis parum inæquilateris, sursum repandis, membranaceis, petiolis nervoque medio subtus parce appresse pilosulo; receptaculis supra ramulos aphyllos fugaciter bracteatos puberulos paniculatos dispositis subfasciculatis, breviter pedunculatis, basi bracteatis, globoso-turbinatis, obsolete costulatis.

HAB. Ins. *Philippinas.* (Cuming! n. 1939.)

Accedit etiam ad *C. Volkameriæfoliam* et *prostratam*. *Folia* 9–14 cent. longa.

TAB. IX. *A.* *C. microcarpa*, cum infl. *a*, a. m.; *b*, fl. fem.; *c*, diagramma, a. m.

26. *Covellia mollis*, n. sp. Foliis alternis vel summis suboppositis, modice petiolatis, lanceolato-oblongis oblongisve utrinque acutiusculis vel basi subobtusis, integerrimis vel repandis membranaceis trinerviis et utrinque venosis, præsertim subtus; ramulis, petiolis, pedunculis, receptaculisque molliter pubescentibus, supra glabriusculis; receptaculis solitariis vel geminis subturbinatis basi minute bracteatis.

Hab. Javam. (Zolling. n. 573! in Hb. Hook.)

Petioli dense hirto-pubescentes 2½–1, *folia* 14–18 cent. longa.

27. *Covellia paniculata*, n. sp. Ramulis, petiolis, foliisque subtus in nervis appresse hirtellis; his breviter petiolatis, plerumque inæquilateris oblongis ellipticisve longe acuminatis, basi subæquali acutiusculis, versus apicem crenulato-repandis, utrinque glandulose punctulatis, 6–8 venulosis; receptaculis pedunculatis supra ramos aphyllos geminato- vel fasciculato-racemosis; racemis paniculatim dispositis; fl. femineis basi perigonio tubuloso vaginatis, stylo piloso.

Hab. in *Java* (Lobb! in Hb. Hook.)

Petioli 2–5 mm., *folia* 8–12 cent. longa.

§ 5. *Species a congeneribus recedens.*

28. *Covellia Webbiana*, n. sp. Ramulis, petiolis, pedunculis puberulis; foliis alternis versus ramulorum apices confertis modice petiolatis, lanceolatis, vel cuneato-lanceolatis, attenuato-obtusis vel retusis subcoriaceis integerrimis, margine subundulatis, supra glabris lævibus, subtus fuscescentibus, sub lente punctulatis; receptaculis axillaribus geminis (?) breviter pedunculatis subgloboso-turbinatis, glabris, basi in stipitem brevem pedunculum æquantem constrictis, basi bracteis 3 membranaceis puberulis sustentis, ore umbilicato marginatis.

Hab. *Austro-Caledoniam* (Webb! in Hb. Hook.)

Petioli 1–1½ cent., *folia* 6–12 longa. Genitalia nondum bene nota.

§ 6. *Species receptaculo extus bracteis adnatis sparse-squamato insignis.*

29. *Covellia Griffithii*, n. sp. Ramis laxis repentibus, ramulis tenerrime puberulis; foliis alternis longe petiolatis oblongis vel obovato-oblongis subacuminatis, basi truncatis vel subemarginatis, subinæquilateris, grosse serrato-dentatis, tenuiter membranaceis, utrinque in nervis petioloque appresse hirtellis, subtus pallidis et minute punctulatis vix asperulis; receptaculis axillaribus pedunculatis obovato-turbinatis, basi stipitato-constrictis, 3-bracteatis,

obsolete costulatis et ubique bracteis obtusis crassis dein tuberculiformibus subsquamosis, apicem versus densioribus, tenere puberulis.

HAB. *Mergui.* (Griffith! n. 1143 in Hb. Hook.)

Species admodum singularis, a genere autem non separanda. Stirps videtur scandens vel repens, *ramis* fistulosis teretibus fuscis striatulis, *ramulis* tenere puberulis. *Folia* dissita, *petiolis* tenuibus 3–5 cent. longis sustenta, trinervia et utrinque paucis costulis venosis instructa, haud perspicue reticulata, 10–15 cent. longa, 5–8 lata. *Stipulæ* membranaceæ diutius persistentes lanceolatæ acuminatæ subglabræ 5–8 mm. longæ. *Pedunculus* 1 cent. vix æquans. *Receptaculum* 1 cent. paullo superans, ob bracteas adnatas singulare, pariete tenui, intus sub ore bracteis fusculis occlusum, cæterum nudum. *Fl. fem. nudi,* ovarium gynophoro sustentum dimidiato-ovatum, *stylo* brevi, *stigmate* tubuloso. *Achenia* globosa stipitata vel sessilia, basi perigonio tubuloso instructa (?).

§ 7. *Cystogyne.* (Cystogyne, Gasp. Nov. Gen. p. 8. Ricerch. p. 84. tab. VIII.) Perigonium floris fem. monophyllum in modum vesicæ pistillum obducens, dein lateraliter dehiscens.

30. *Covellia venosa.* (F. venosa, Willd. H. Berol. p. 36. tab. 36, haud Ait. F. leucantatoma, Poir. Enc. F. leucotoma, R. et S. vol. I. p. 501. F. leucosticta, Spr. Syst. Cystogyne leucosticta, Gasp. l. c.)

HAB. *Ind. or.*—In sp. culto H. Amstel. video perig. fl. fem. nullum.

Species in genere dubia.

31. *Covellia* (?) *costata,* n. sp. Glabra; foliis alternis oblongo-ovatis æquilateris, obtuso-acuminatis, basi cordatis, sinu lobisque rotundatis, subintegerrimis, trinerviis et utrinque circiter 12-costatis, nervo costisque patulis (in sicco) rubescentibus prominentibus vix reticulatis, mox sub lente subpuberulis, mox glaberrimis, stipulis lanceolatis glabris; receptaculis axillaribus pedunculatis globosis basi 3-bracteatis puberulis.

HAB. *Ind. orient. contin.* (n. 872. Hb. Wight!)

An *Urostigma*? *Petioli* semiteretes 2–4 cent., *folia* 25 longa, 13–14 lata.

Observ. Hujus generis videntur: *F. squamosa, Roxb. Fl. Ind. III. p.* 531, ex *Rohilcund* Indiæ, a cl. auctore brevius descripta, hujus generis vel vera Ficus. *F. costata, Ait, Hort. Kew. III. p.* 452.—Num cum *Cov. macrophylla* conjungenda? an cum *Cov. leuconeura*? *F. racemosa, Linn. Syst. Veg. p.* 922. *Vahl, Enum. II. p.* 188. *Atty-Alow, Rheede, Malab. I. p.* 43. *tab.* 25.

F. auriculata, Lourier, Fl. Cochinch. II. p. 666.

HAB. in *Cochinchina* (Low.); hujus generis videtur propter receptaculorum situm.

VII. *Synœcia.* *Flores* in *receptaculo* pyriformi vel stipitato-ovato ebracteolati, *prorsus nudi, monoici, mixti.* *Stamina* pistillis interposita, pro singulo pistillo circiter 3–4, *filamentis* brevissimis, *antheris linearibus* vel *elongato-ellipticis,* longis, bilocularibus, *connectivo* tenui, *loculis* antice confluentibus, rimis lateralibus. *Ovarium* sessile dimidiatum compressum; *stylo* laterali, in *stigma* longum inæqualiter bicrure vel fere simplex terminato, cruribus filiformibus albis intus submuriculatis. *Achenia* (magna) dimidiato-orbicularia vel semilunaria lenticulari-compressa.—*Frutices indici* humiles erecti vel alte scandentes, *foliis* alternis obovatis vel ellipticis cuneatisve, integerrimis glabris vel glabriusculis, lævibus, *receptaculis* vel axillaribus vel lateralibus basi tribracteatis, ore *bracteis* imbricatis occluso, intus sub ore *bracteis* parvis carnosis, cæterum præter pilos minutissimos paucos in unâ specie obvios, prorsus nudis, maturis, aurantiacis, pulposo-mollibus. *Flores* in *S. diversifolia* præsertim in inferiore ½ receptaculi parte pauci dissiti, in *S. falcata* quam confertissimi, numerosissimi, utrinque sexus organis adeo mixtis uti dubium fere sit, num fl. monoici vel hermaphroditi statuendi sint. In *S. divers.* hermaphroditi fere videntur, cum non solum 3–4 stamina singulo-ovario circumposita videantur, sed in sup. receptaculi parte *flores abortivi* adsint, in quibus stamina 2–3 basi in stipitem connata rudimentum pistilli inter sese includunt.—*Antheræ* succulentæ rubescentes, serius aurantiacæ, apice rubro-maculatæ, utrinque parvis pilis instructæ.

Præ reliquis hoc genus ad *Dorsteniam* accedit, si ad flores prorsus nudos respicias.

1. *Synœcia diversifolia.* (Ficus diversif. Blume Bijdrag. l. c.) Foliis dilatatis subtriangulariter obovatis, basi cuneato-acutis, receptaculis solitariis et geminis præter bracteas ciliolatas glabris pedunculis tenerrime puberulis. (Tab. IX. A.) *Java* (Bl., v. v. in Hort. Amst. e Java introduct, et s. a cl. Lobb lect. in Hb. Hook.) Fruticulus sempervirens et semperflorens. *Folia* alterna breviter petiolata, coriacea, saturate viridia 2–3 cent. longa, apice rotundato, truncato vel fere retuso, nervo medio bifido subtus reticulato-ramoso. Stipulæ lanceolatæ. *Pedunculi* 1½ cent. longi tenues viridescentes tenerrime puberuli. *Receptacula* suburceolata vel pyriformi-turbinata, 1⅓–1½ cent. longa glabra, nascentia viridia carnosa, adulta aurantiaco-flavida, pulposa, basi *bracteis* 3 ciliolatis latis appressissimis sustenta, ore similibus paucis occlusa, intus in vertice bracteis carnoso-succulentis obtusis instructa, cæterum præter pilos tenerrimos nuda lævia. *Flores* pauci, circiter octo dissiti. *Ovarium* dilute viridescens, *stylus* albidus. *Stigmatis crura* valde inæqualia tenerrima. *Ovulum* unicum parieti styligeræ appensum, serius fuscescens. *Antheræ* succulentæ, in nullo flore hiantes, loculis connectivo plano concoloribus. *Rudimenta florum abortivorum* in sup. receptaculi parte pauca, stipitata, viridula, antheris abortivis semiglobosis vertice rubicundis. *Achenia* obliqua obovato-clavata, vel quædam (fertilia?) semilunata magna viridescentia coriacea. In sp. culto *folia duplo majora* et magis dilatata, reliqua autem omnia congrua.

Tab. IX. *B.* *Synœcia diversifolia, Miq.* n. m.

2. *Synœcia falcata.* (Ficus falcata, Thunb. diss. Fic. p. 5. F. macrocarpa, Blum. Bijdrag. p. 459.) Repens radicans, ramis gracilibus ramulisque junioribus puberulis, foliis breviter petiolatis (petiolis glabriusculis vel subpuberulis) dimidiato-oblongis obtusis integerrimis uninerviis et tenere patule subvenulosis, glabris, lævibus subtus punctulatis, receptaculis magnis ad ramos lateralibus (?) ovato-globosis in stipitem basi tribracteatum abrupte con-

strictis cæterum subsessilibus, apice subattenuato bracteis exiguis clauso, puberulis glabrescentibus.

Hab. *Java* (Lobb! in Hb. Hook.)

Caulis digitum minorem crassus angulosus cortice pallido lævigato. *Rami* elongati graciles, ramuli breves fere pinnatim dispositi, *petiolique* (breves 1–2 mm. longi) ferrugineo-puberulo-hirtelli. *Folia* 2½–3½ cent. longa, latere uno convexo, altero concavo vel recto, basi bi- vel sub-trinervia et venulis 2–4 utrinque subprominulis instructa, 6–10 mm. supra medium lata, nitida. *Stipulæ* geminæ parvæ fuscæ glabræ lanceolatæ. *Receptacula* (florentia) 4–5 cent. longa, ovata apice subattenuata, in *stipitem* 2–2½ cent. longum basi *bracteatum* constricta, *pedunculo* genuino fere nullo. *Flores* quam maxime densi, prorsus nudi, parieti lævissimo et glaberrimo inserti, pistilla scil. et stamina mixta, quorum dispositionis norma erui nequit. Plura stamina ad unum pistillum pertinere, e majori illorum numero concluderem. *Filamenta* brevissima plana, *antheræ* lineares longæ fuscæ glabræ, connectivo angusto, loculis tenuissimis antice subconfluentibus. *Ovarium* sessile parvum dimidiato-ovatum compressum uniovulatum, *stylo* longo, *stigmate* albido filiformi, uni- vel inæqualiter bicruri.

Thunbergii descriptio bene quadrat. *Vahlius* autem (Enum. II. p. 139) caules glabros dicit, quare ejus synonymon dubium videri posset.

Varietas *glabrior*; foliis brevioribus paulo latioribus basique extrorsum magis productis. *Ficus stipulata, Thunb? Wallich n.* 4574.

Hab. *Penang.*

Tab. XI. *Synœcia falcata, Miq.* n. m.

(To be continued.)

On some new Chinese Plants; By H. E. Hance, Esq.

Dr. Lindley has obligingly handed to us the following notes on some new or little known Chinese Plants, from the pen of a gentleman resident at Hong-Kong, and who we trust will do much to advance our knowledge of Chinese Botany.

STROPHANTHUS DIVERGENS, *Grah.*

Obs. *Folliculi* ovati, obtusiusculi supernè plani, demùm lignosi. *Semina* oblonga compressa, comâ reliquo semine quadruplo longiore, apicem fructûs spectante.

DIANTHUS MORRISII;

Caulibus decumbentibus ramosis paniculatis paucifloris, floribus subgeminatis squamis calycinis senis ovatis acuminatis calyce triplò brevioribus, petalis fimbriatis tubo calyce duplò brevioribus, foliis lanceolato-subulatis.

HAB. in arenis insulæ Lintin legit clar. Morris—Flores violacei (inodori?).

D. *fragranti*, Bieb. valdè affinis. (v. v. sp.)

EXACUM (§ PSEUDOCHIRONIA) BELLUM;

Caule tetraptero subsimplici, foliis sessilibus ovatis acuminatis 3-nerviis margine lævibus, calycis 4-partiti segmentis ovatis acuminatis subalatis, corollæ cœruleæ tubo calyce incluso lobis rhomboideo-ellipticis tubo plus triplo longioribus.

HAB. ? in insulâ Hong-Kong Sinensium ad cacumina montium. Fl. Aug—Oct.—Herba erecta pedalis. Folia $\frac{1}{2}$—1 poll. longa. Floris diameter pollicaris. Corolla siccitate lutescens. Capsula erecta, ovoideo-subglobosa.

ELODEA, *Adans.* (*Pursh*). [char. emend.]

Sepala 5 persistentia subæqualia imbricata. *Petala* 5. *Stamina* 00; filamentis in adelphiis 3 penicilliformibus altissimè coalitis. *Glandulæ* calceoliformes adelphiis alternantes. *Styli* 3. *Capsula* 3-locularis maturitate tegumentis floralibus cincta. Semina 12–16 samariformia.

ELODEA CHINENSIS; *

Caule erecto, ramis teretibus glabris purpurascentibus, foliis elliptico-lanceolatis oblongisve acutis basi in petiolum brevem angustatis nigropunctatis coriaceis, floribus axillaribus pedunculatis 2–4–6 glomeratis, sepalis ovatis obtusis, petalis oblongis rubris.

---

* Probably the *Ancistrolobus ligustrinus* of Spach:—*Hypericum Chinense*, Retz.? Ed.

HAB. Frutex 6–8 pedalis, in insulâ Hong-Kong copiosissimus.

DESMODIUM. § PLEUROLOBIUM, DC. Prod. ii. 326.
* PTEROPODA, DC. loc. cit.
DESMODIUM ACROCARPUM;

Caulibus adscendentibus diffusis triquetris angulis subhirsutis, foliis ovato-lanceolatis subcordatis acuminatis marginibus venisque hirsutis petiolo alato quintuplo vel interdum octuplo longioribus, stipulis ovato-cordatis acuminatis scariosis leguminibus adpressè pubentibus apiculatis, articulis 6–9 subquadratibus.

HAB. In ins. Hong-Kong Chinensium.

Sur la Famille des LINEES; *par* J. E. PLANCHON, *Docteur-ès-Sciences.*

(Continued from p. 186.*)*

27. L. *Berlandieri,* Hook. L. perenne (et primo anno florens !) glaberrimum; caule sæpius a basi in ramos ascendentes apice paucidivisos soluto; foliis approximatis alternis linearibus crassiusculis summis seta brevi inferioribus mucrone tabescente apiculatis; pedicellis floridis conferte corymbosis fructiferis in cymas unilaterales racemiformes digestis calyci fructifero subæqualibus capsula ovata acuta 10-loculari subduplo brevioribus; sepalis ovatis v. lineari-lanceolatis trinerviis aristatis bracteisque margine glanduliferis; floribus magnis; stylis supra medium connatis.

HAB. in ditione Texas, Americæ sept. prope Bezar; *Berlandier.* —Rio Brazos; S. Felipe, *Drummond*; insula Galveston, *Lindheimer*, n. 22 in Hb. Hook; etiam in prov. Connecticut, prope Newhaven, *Oakes, Nuttall* in Hb. Hook.; in Carolina sept., *Schweinitz*; et in Georgia, *Dr. Boikin,* fide Torr. et Gray.

L. *Berlandieri*, Hook. Bot. Mag. tab. 3480, (ubi sphalmate *Berendieri*)—Engelm. et Gray, pl. Lindh. no. 22.

L. *rigidum* β (?) *Berendieri*, Torr. et Gray, Fl. of N. Am. I. p. 204. Specimina quædam constant e ramo simplici erecto, 4–5 pollicari, radici tenui continuo, apice corymbo 6–9-floro terminato; alia contra e caule primario crassiusculo, e basi et supra basim caules plures, 7–9-pollicares, ascendentes agente. Folia majora 7–10 lin. longa, 1 lin. lata, crassiuscula. Characteribus omnibus, si amplitudinem florum excipias, cum L. *rigido* infra fusius describendo convenit, attamen facie distincta videtur. Capsula in utraque specie basi lata; receptaculo seu melius fructus ipsius parte basilari carnosa, stellæformi-pentagona, angulo singulo (stellæ s. pentagoni carnosi) intra interstitia valvularum carpellorum crustaceorum locato et inde valvulas basi sibi invicem agglutinante; unde advenit ut si capsulam aqua immerges, valvulæ carpellorum ab apice versus basim dehiscentes, gradatimque divergentes, basique carnosa tantum conjunctæ, in stellæ modum expanduntur. Septa spuria carpelli cujusvis completa, attamen pars dorso loculi affixa, falciformis, crassior, septoque incompleto *Linorum* fere omnium respondens, dum pars antica columellæ admota fenestramque alterius claudens e membrana tenuissima constat.

28. L. *rigidum*, Pursh.—L. glaberrimum, caule infra et supra medium in ramulos plures iterum corymboso-furcatos diviso; ramulis pedicellisque profunde sulcatis; foliis alternis crebris erecto-patentibus linearibus apiculatis summis marginibus involutis et glanduloso-serrulatis; glandulis stipularibus 0; pedicellis sub calyce leviter dilatatis; sepalis lanceolatis setaceo-cuspidatis margine glanduliferis; stylis fere ad apicem connatis, capsula ovata acuta tertia parte longioribus.

Hab. in ditione Missurensi a flumine *Platte* ad flumen *Saskatchawan*, et in California; in planitiebus elevatis secus flumen Platte infra junctionem brachiorum *forks* dictorum; *Geyer*, no. 169 in Hb. Hook.; secus flumen Missouri, *Nutt.*, *Dr. James* ex Torr. et Gray; secus flumen Saskatchawan, *Richardson* in Hb. Hook.; California, *Nutt.* ex Torr. et Gray.

Planta tota 4–15-pollicaris. Radix simplex, verosimiliter perennans. Caulis spatio 2–6-pollicari simplex, (nisi casu abscissus, quum ramulos fere a basi profert,) teres, foliis denudatus. Rami crebre divisi, fastigiati. Folia conspicue laxiora quam in L. *multicauli* et L. *hudsonioidi*, patenti-erecta, internodia semper superantia, longiora 2–6-pollicaria, vix 1 lin. lata, crassiuscula, uninervia, mucronulo sæpius brevissimo. Ramulorum et pedicellorum anguli lævissimi. Cymarum rami sæpius conferte divisi. Pedicelli flore breviores, calycem fructiferum æquantes v. eum duplo superantes, sub flore articulati, articulo superiore nodiformi-prismatico, a basi ad apicem incrassato, sub calyce in marginem pentagonum dilatato cujus anguli cum sepalorum basibus alternant, inde quasi calyculum sub calyce efformante. Sepala lanceolata, trinervia, nervis prominentibus, margine glandulis crasse stipitatis ornata, sub fructu 2–½ lin. longa. Petala expansa non vidi, sed flos totus illo L. *Berlandieri* conspicue minor. Capsula et styli illis L. *Berlandieri* conformia.

29. L. *Bootii*, Planch.—L. caule stricto brevi ramulisque crebris sulcato-striatis; foliis linearibus alternis; glandulis stipularibus geminis; racemis subunilateralibus cymosis; sepalis lanceolatis acutis capsula subglobosa vix longioribus; stylis circiter ad medium concretis.

Var. *α*, humilior; radice exili; caule solitario; inflorescentiis laxioribus; floribus capsulisque majoribus.

Var. *β*, elatior; radice crassa (perenni?); caulibus geminis; inflorescentiis confertioribus capsulisque minor.

HAB. in America septent.—var. *α* verosimiliter in Prov. confederatis, *D. Boot* in Hb. Hook.—var. *β* in ditione Texensi prope Houston, *Lindheim*.

Species characteribus et imprimis glandulis stipularibus ab omnibus Boreali-Americanis distinctissima, cæterum inter L. *rigidum* et L. *Virginianum* quasi media. Priori accedit habitu, ramis crebris fastigiatis profunde striatis, foliis margine scabris et stylorum concretione; posteriori sepalis brevibus, capsulaque subglobosa vix magnitudine grani *Piperis nigri*. Mirandum ergo quo fato species adeo distincta præstantissimos botanicos

Torreyum et Grayum fugerit; imo var. β, quæ inter plantas Lindheimerianas (saltem in Hb. Hook.) sub no. 118 occurrit, in enumeratione specierum hujus collectionis a cll. Engelmannio et Grayo edita plane desideratur.

30. L. *strictum,* L.—L. perenne? (primo anno florens) glabrum; foliis linearibus uninerviis margine et subtus secus nervum medium scaberrimis; pedicellis ante et post anthesin erectis (attamen ramulis inflorescentiæ ante anthesin interdum nutantibus,) fructiferis brevissimis incrassatis v. gracilioribus et capsula duplo et ultra longioribus; sepalis inæqualibus e basi ovata in acumen linearem latiusculum viride rigidum productis; stylis a basi liberis.

Var. α *capitatum,* Benth. corymbulis densis in corymbum compositum foliosum collectis, pedicellis brevissimis v. fructu longioribus.

An L. *strictum,* L. herb. ad hanc vel ad sequentem varietatem spectet in schedulis me non notavisse doleo.

L. *strictum var. capitatum,* Benth. in Hb. Hook.—L. *strictum Reich.* Icon. fig. 5170.—L. *abyssinicum,* Hochst. in Pl. Schimp. Abyss. (ann. 1840,) no. 70, (forma corymbis paulo laxioribus).

β. *corymbulosum,*—gracilius; corymbo composito laxiusculo, pedicellis calyce 2–3-plo longioribus.

L. *corymbulosum,* Reich. l. c. fig. 5170. Koch, Syn. Fl. Germ. (ed. 2).

γ L. *alternum,* Reich.—pedicellis fructiferis brevibus in racemos secundos corymbosos digestis, sepalis minoribus.

L. *alternum,* Pers. ex Benth. Cat. Pl. Lang. 96.—L. *strictum β alternum,* Reich. l. c. fig. 5170, *b.*

δ. *spicatum,* Reich.—corymbulis densis in racemum spiciformem densum collectis; pedicellis brevissimis v. fructu duplo longioribus.

L. *spicatum,* Pers. ex Reich.—L. *strictum γ spicatum,* Reich. l. c. fig. 5170. c.—L. *inæquale,* Presl. (monente cl. Reichenb.)

Hab. ab insulis Canariensibus, per regionem mediterraneam fere totam, in Orientem usque ad regnum Cabulicum et in Abyssiniam diffusa; Insulæ Canarienses, *Webb, Despréaux, Bourgeau* in Hb. Hook.; Mauritania, Oran, Alger, *Bové,* ibid.; Lusitania, *Brotero*; Hispania, prov. Granatensis, *Boiss.*; Asturiæ, *Durieu*; Gallia, Monspelium, *Benth.*, et *ipse* olim; Corsica, *Soleirol* ex Moris; Sardinia, *Moris*; Sicilia, *Parlatore* in Hb. Hook.; Istria, *Benth.* ibid.; Creta, *Sieb.* herb. Cret.; Insulæ Archipelagi, ibi frequens ex *Sibth.*; Persia australis, *Aucher,* no. 4273; Regn. Cabulicum, *Griffith,* no. 1621 in Hb. Hook.; Abyssinia, mons Schodola regionis Adoensis, *Schimp.* (ann. 1840,) no. 70. (Varietates α et β fere semper una in locis enumeratis commixtæ crescunt.) Species in Flora Rossica cl. Ledebourii non enumeratur; an igitur et provinciis Rossiæ australis et Caucasicis exul?

—var. β. Istria, *Benth.*, in Hb. Hook.; Dalmatia, *R. C. Alexander.*

—var. γ. in maritimis Monspelii ipse legi interdum insigniter proceram; nunc planta sub oculis non adest: verosimiliter alibi crescit.

Obs. J'ai dû hésiter à réduire le L. *corymbulosum,* Reich. au rang de variété, puisque M. Koch l'adopte comme espèce dans son Synopsis. Cependant, comme la présence d'une ligne de pubescence sur la partie de l'axe florifère opposée à chaque pédicelle du L. *corymbulosum* est aussi communément observée chez les formes ordinaires du L. *rigidum,* la distinction de ces espèces ne reposerait plus que sur l'habitus un peu grèle de l'une et la longueur éminemment variable des pédicelles. M. de Notaris (Linnæa 18, p. 158) cherche, il est vrai, à fonder cette distinction sur un petit denticule subulé qu' on observerait (fort souvent, *persæpe*) de chaque coté de la base des feuilles supérieures ou florales du L. *corymbulosum,* et qui manquerait à celles du L. *rigidum.* Mais ce caractère pour être valable aurait besoin d'une première condition essentielle, celle d' être constant et général, ce qui n'est pas le cas, du propre aveu de l' auteur.

31. L. *corymbiferum,* Desf.—L. perenne elatum præter scabritiem marginum foliorum glaberrimum; caule simplici stricto in corymbum foliosum amplum diviso; foliis ovato- vel lineari-lan-

ceolatis acutissimis planis; pedicellis fructiferis capsulæ subæqualibus, sepalis ovatis acuminatis in sicco nitentibus; stylis a basi liberis.

Hab. in Mauritania, mons Atlas prope *Mayane* (i. e. *Milianah*, ex cl. Mumby), *Desf.*; Alger, *Bové* in Hb. Hook., *Mumby*.

L. *corymbiferum*, Desf. Fl. Atl.

Obs. Specimen hujus speciei ex Algeria in herb. Linnæi innominatum exstat.

32. L. *setaceum*, Brot.—"L. annuum, caule dichotomo-paniculato sub anthesi erecto, foliis acuminatis setaceis subserrato-scabris congestis subverticillatis, calycis foliolis ovato-lanceolatis infra medium ciliatis, corolla lutea." *Brot.*

L. *setaceum*, Brot. Phyt. Lusit. I. no. 22, tab. 6.

β (?) *bicolor*—ramis paniculæ plerisque insigniter flexuosis, corolla lutea, fundo cæruleo, striis purpureis.

L. *bicolor*. Schousb. Maroc. p. 135. (huc ex auctorit. cl. Benth. in Bot. Reg. sub folio 1326 refertum.)

Hab. Stirps typica in Lusitania, prope Conimbrigam (*Brotero*); Hispania australi (Boiss. Voy.), et regno Maroccano, *Brousson.* et *Saltzmann* ex Boissier, (sed valde suspicor stirpem Saltzmannianam a cl. Boissiero citatam esse L. *bicolorem* hujus collecionis, ideoque ad variet. β referendam); in Mauritania, *Durand* in Hb. Smith.

Var. β prope Tingidem, Saltzmann in Hb. Hook. (sub nomine *Lini bicolori*); e Mauritania in Hb. Gouan, nunc Hook. sub nomine L. *tenuifolii*, et revera cum specimine L. *tenuifolii veri* commixtum.

33. L. *Mulleri*, Moris.—L. perenne, ramis gracilibus ascendentibus alternis vel oppositis inferne pilosulis; foliis inferioribus oppositis v. alternis obovato-ellipticis v. lanceolatis glabriusculis ciliolatis superioribus auguste linearibus alternis; corymbo paucifloro; sepalis ovatis acuminatis capsulam ovatam acutam subæquantibus.

Hab. Sardinia, in collibus aridis inter frutices prope Iglesias, *Mull.* Herb. Un. It. (in Hb. Hook.)

L. *Mulleri*, Moris. app. ad Elench. Stirp. Sard. (anno 1828) p. 1. et Flor. Sardoa, I. p. 358, tab. 23.—L. *Sardoum*, Mull.

Obs. Species habitu, foliis inferioribus oppositis, floribus et capsula ad L. *tenuem* accedens, a quo tamen egregie differt stigmatibus capitatis, caule perenni, pedicellis fructiferis paucis corymbosis, nec pluribus in racemos secundos dispositis.

34. L. *gallicum,* L.—annuum gracile præter margines foliorum et sepalorum læve glaberrimum; foliis linearibus; ramulis inflorescentiæ ante anthesin cernuis; sepalis lineari-subulatis, corolla parva vix duplo brevioribus.

L. *gallicum,* L. sp. p. 401, (cum diagnosi quoad inflorescentiam erronea a Sauvagesio mutuata) et herb.!—Reich. Icon. Fl. Germ. tab. 5168.—L. *aureum,* W. et Kit. Pl. Rar. Hung. tab. 177 (monente cl. Reichenb.)

β *Sieberi*—elatum gracillimum; pedicellis inferioribus fructiferis capsula 3–4-plo longioribus. (In forma vulgari pedicelli variant nunc brevissimi quales Brotero in Fl. Lusit. descripsit, vel in eodem racemo capsula 2-plo longiores.)

L. *gallicum,* Sieb. Hb. Cret. γ (?) *Abyssinicum,*—sepalis capsula vix longioribus; an sp. distincta?

L. *Abyssinicum,* Hochst. in Schimp. pl. Abyss. sect. 2nda, no. 1107, nec sect. prima.

Hab. ab insula Madera, per regionem mediterraneam totam (excl. Ægypto), in provincias Caucasicas ad mare Caspium, inque Abyssiniam (?) extensa; etiam in ditione Parisiensi occurrit ex cll. Cosson et Germain. Madera, *Lowe* in Hb. Hook; Algeria, *Bové,* ibid.; Asturiæ, *Durieu,* ibid.; Lusitania, *Brotero*; Gallia australis et occident., *Duby*; ditio Parisiensis, *Coss.* et *Germ,*; Monspelii, *Benth.* et *ipse* olim; Italia, Lucca, *Hb. Hook.*; Sardinia, *Moris*; Macedonia, peninsula *Hagion Oros,* et prope Pandocratoras alt. 0′—1200′, *Griseb.*; prope Byzantium, *Aucher,* no. 822; Tauria, Iberia, Cachetia, Somchetia, territor. Elisabethpol, prov. Schirwan et insula *Sara* maris Caspii, *Ledeb.* Fl. Ross.—Var. β in Creta, *Sieb.*; var. γ in monte *Schodola* Abyssiniæ, Schimper.

Obs. L. *gallicum,* Fl. Græc. tab. 303 (e Laconia et insulis Archipelagi) ob habitum rigidum, ramulos crassiusculos, flores capsulasque multo majores vix huc spectans, ad var. δ L. *stricti* propius accedere videtur, vel forsan speciem propriam sistit.

35. L. *Mysorense*, Heyne.—"L. glabrum erectum; foliis alternis oblongis obtusis basi attenuatis; floribus paniculato-corymbosis; sepalis ovatis acutiusculis margine subciliatis; petalis (flavis) calycem breviter superantibus; stylis basi connatis; stigmatibus globosis; capsula acuta mucronata." *Benth.*

Hab. a Ceylona ad fines supremos oræ Malabaricæ Pen. Ind. or. extensa; Ceylona, *Domina Walker* in Hb. Hook.; ditio Mysore, Ind. or. *Heyne* ex Wall. et Benth.; montes Neelgherries, *Gardner* in Hb. Hook.; prope Bombay, *Hb. Hook.*, ex Hb. Lambert.

L. *Mysorense*, Heyne MSS. in Wall. cat. (at ibid. etiam L. *humile*, Heyne ex Benth.)—Benth. in Bot. Reg. sub folio 1326.

36. L. *Virginianum*, L.—perenne glaberrimum; caulibus e collo radicis 1–3 strictis superne paniculatis et plus minus sulcatis lævibus; foliis membranaceis margine lævibus inferioribus oppositis obovato-oblongis intermediis lanceolatis planis acutis; glandulis stipularibus 0; pedicellis fructiferis laxe cymoso-racemosis capsulæ subæqualibus v. ea longioribus; sepalis 1-nerviis margine glandulosis; stylis a basi liberis; capsulæ parvæ depresso-globosæ semiseptis fere completis.

Var. α *microcarpum*,—elatius, ramulis fructiferis divaricato-patentibus; calyce capsula minuta depresso globosa obtusa subbreviore; fenestra loculorum subclausa.

L. *Virginianum*, L. herb. (specimine e Kalmio accepto)—Reichenb. icon. exot. II. tab. 198.

Var. β *medium*,—humilius, ramulis fructiferis strictis erecto-patentibus, calyce capsulam (præcedenti paulo majorem) paulo superante; fenestra loculorum lineari-angustissima.

Var. γ (?) *Floridanum*,—elatum; ramis paniculæ crebris arrecto-fastigiatis fructiferis confertioribus; capsulis ovatis subacutis calyci æqualibus; fenestra loculorum semielliptica demum seminibus viam præbente. An sp. distincta?

Var. δ (?) *Texanum*—habitu var. *α*, sed floribus majoribus, laciniis calycinis valde inæqualibus, majore pedicellum brevem et capsulam (non plane maturam) obtusam fere duplo superante. An sp. distincta?

Hab. in America Sept. a Canada ad Floridam (?) et ditionem Texanam (?).—Var. *α*, Georgia, ad fossas aquosas, *Hb. Hook.*; prope Covington, *Drummond*, ibid.—Var. *β*, Canada, lacus Huron, *Dr. Todd* in Hb. Hook.; Kentucky, *Dr. Short*, ibid.; alibi verosimiliter in Prov. confederatis.—Var *γ*, Florida. *Dr. Chapmann*, ibid.—Var. *δ*, in ditione Texana, prope S. Felipe, *Drummond*, no 38. coll. tertiæ.

Descriptio var. *γ*.—Caulis in specimine inferne abscissus, 3-pedalis, teres, basi crassitiæ pennæ corvinæ, subexsulcus, ramulis longe supra medium crebris, alternis, patenti-erectis, 3–4-pollicaribus, apice paucidivisis. Folia caulina (saltem partis illius caulis quæ nobis suppetit) alterna, internodiis longiora, erecta, pollicaria, late linearia, mucronulato-sphacelata, interdum acutata, margine sub lente puncticulis minutissimis obsessa, (attamen tactu lævia,) uninervia, avenia, crassiora quam illa formæ vulgaris L. *virginici*, siccitate glauca et obscure viridia; ramealia et floralia auguste linearia vel subulata, marginibus plus minus involuta. Fructus pedicello adjecto internodiis racemi subduplo breviores, interdum remotiores vel confertiores. Pedicelli 1½–2 lin. longi, 5-angulati, infra medium articulati, articulo superiore subclavato. Sepala anguste lanceolata, parum inæqualia, recurvo-acuminata. Capsula grano *piperis* minor, ovata, acutiuscula.

37. L. *Guatemalense*, Benth.“—L. glabrum; caule angulato virgato superne paniculato; foliis alternis lanceolatis vel lineari-lanceolatis acutis; glandulis stipularibus geminis; floribus ad apices ramulorum paucis pedicellatis; sepalis lato-ovatis apice glanduloso-ciliatis capsula acutiuscula brevioribus, petalis luteis calyce vix triplo longioribus (*filamentis staminum fertilium basi edentulis*, Planch.); stylis liberis.” Benth.

Hab. in Guatemala, *Skinner* in Hbb. Benth. et Hook.

L. *Guatemalense*, Benth. Bot. of the Sulphur, p. 67, in annot.

Obs. Cette espèce se distingue du L. *Mexicanum* auquel elle

ressemble beaucoup, par ses feuilles toutes alternes, plus étroites, à bords roulés en dehors, par ses fleurs plus petites, ses anthères elliptiques plus courtes de moitié, ses styles libres presque dès leur base, et surtout par l' absence de denticules accessoires à la base des filets de ses étamines. Il n' est pas impossible que ce soit la même que le L. *hypericifolium*, Presl., dont elle parait cependant différer par ses feuilles subitement retrécies mais non aigues à la base, et par ses pédicelles toujours plus courts que la fleur.

38. L. *hypericifolium*, Presl.—"L. suffruticosum, glabrum; caulibus erectis angulatis; foliis ovato-oblongis utrinque acutis sparsis oppositis ternisve; panicula ampla; sepalis ovatis acuminatis uninerviis; capsulis mucronatis." Presl.

Hab. in Mexico, *Haenke* ex *Presl.*

Flores albi, unguibus petalorum flavescentibus *ex auct.* (nonne potius flores lutei, ut in omnibus affinibus, exsiccatione decolorati ?). Styli a basi liberi et stigmata capitellata.

39. L. *Mexicanum*, H. B. K.—L. glabrum elatum; caulibus lævibus superne paniculato-divisis; foliis intermediis oppositis lanceolato-ellipticis vel ovatis acutiusculis membranaceis margine tenui revolutis; glandulis stipularibus geminis; corymbis multifloris; sepalis ovatis breviter acuminatis margine glanduloso erosis; filamentis staminum fertilium basi utrinque denticulo auctis; stylis ad medium connatis.

Hab. in regno Mexicano, in sylvis prope Sta. Rosa, altit. 1300 hexap., *Humb. et Bonpl.*; in sylvestribus prope Xalapam, S. Andrez, San Miguel del Soldado, *Schiede*; in sylva inter Mineral del Monte et Huazalote, *Ehrenb.* ex Cham. et Schl.; ditio Zimapan, *Dr. Coulter*, no. 759 in Hbb. Harvey et Hook.

L. *Mexicanum*, H. B. K. nov. gen. et sp. vol. 6. p. 31.—Benth. in Bot. Reg. tab. 1326.

40. L. *Orizabæ*, Planch.—L. glabrum, caule simplici elato apice corymbose-ramuloso; foliis (intermediis et superioribus) alternis basi in petiolum brevissimum abrupte contractis lanceolatis acutis mucronulatis margine subcrispulis; glandulis stipularibus geminis; floribus laxe corymbosis breviter pedicellatis parvis;

sepalis brevissime acuminatis margine glandulis paucis sessilibus ornatis; staminum filamentis edentulis; stylis brevibus a basi liberis; capsula ovato-subglobosa, calyci subæquali.

HAB. in regni Mexicani prov. Vera Cruz, in monte Orizaba, *Galeotti*, no. 821.

Habitus L. *Mexicani* et L. *Guatemalensis*. Caulis gracilis, teres, lineis e basi petioli utrinque decurrentibus leviter angulatus, lucidus, rubescens. Folia in ramo circiter pedali (parte inferiore abscissa) sparsa, inferiora internodiis longiora, cauli semi-adpressa, superiora magis distantia, erecto-patentia, omnia respectu caulis plus minus oblique versa, majora 7–8 lin. longa, 3 lin. lata. Corymbuli florum laxi ramulos graciles, ascendentes, inferne nudos terminantes. Flores eis L. *Mexicani* multo, eis L. *Guatemalensis* paulo minores. Sepala ovata, 1–1½ lin. longa, brevissime acuminata, herbacea, margine integra, glandulis nigris, sessilibus aucta. Petala lutea, calyce vix duplo longiora, late obovata, supra unguem latum, basi truncatum, glabrum triplinervia, venis tenuissimis. Urceolus filamentorum brevis; glandulis 5, cuneatis, cum staminibus fertilibus alternantibus, substantiæ urceoli semi-immersis. Filamenta stylis subæqualia. Antheræ brevi-ellipticæ, utrinque emarginatæ. Capsula grano *Sinapeos albæ* subæqualis, calyce adpresso tecta.

Obs. Cette espèce est très voisine du L. *Guatemalense*; mais elle s' en distingue à l' extérieur par ses fleurs plus petites et ses sépales moins acuminés; ceux-ci sont d' ailleurs munis de glandes qui manquent à ceux de la plante de Guatémala (l' expression *glanduloso-serrulatis* qui entre dans la diagnose de cette dernière serait mieux remplacée par *eroso-denticulatis*). Ses pétales ont un onglet très large, tronqué à la base, et trois nervures à peine marquées; ceux du L. *Guatemalense* ont l' onglet attenué en pointe et cinq nervures très distinctes.

41. L. *Organense*, Gardn.—"L. glabrum; caule suffruticoso ramoso; foliis oppositis brevissime petiolatis exacte ellipticis; floribus (paucis) axillaribus capitatis; capsula ovata obtusa valvulis dorso planis." *Gardn.*

HAB. "in Brasiliæ montibus Organensibus, versus summitatem, in dumetis siccis." *Gardn.* no. 5683.

L. *Organense*, Gardner in Hook. Lond. Journ. of Bot. vol. IV. p. 100.

Suffrutex ascendens, ramosissimus, glaber. Rami teretes, striati, lineis 4 elevatis, inter alias minus conspicuas notati, inde interdum subtetragoni. Folia 5–6 lin. lata, 3 lin. longa, membranacea. Glandulæ stipulares utrinque geminæ. Sepala glandulis marginata. Semen tenuissime punctulatum, *ex Gardn.*

42. L. *palustre*, Gardn.—"L. glabrum; caule suffruticoso ramoso, ramis oppositis angulatis; foliis oppositis vel ramulorum alternis linearibus vel lineari-lanceolatis acutis; floribus terminalibus (solitariis); sepalis ovatis acutis ciliatis pellucido-punctatis; petalis flavis; stylis basi liberis; capsula globosa, valvulis dorso planis." *Gardn.*

HAB. "versus summitatem montium Organensium, in graminosis humidis." *Gardn.* no. 5682. (Specimen in Hb. Hook. defloratum.)

L. *palustre*, *Gardn.* l. c. p. 99.

"Suffrutex pedalis, adscendens, ramosissimus. Rami teretes, (tenues,) angulati. Folia sessilia, 2 lin. circiter longa, vix 1 lin. lata. Glandulæ stipulares 0. Capsula subglobosa, 5 valvis. Semen complanatum, fulvum, tenuissime punctulatum." *Gardn.*

43. L. *littorale*, A. S. Hil.—"L. glabrum, multicaule; caulibus erectis; foliis linearibus, acutis, angustis, inferioribus paucis oppositis; floribus paniculatis, petalis calyce 3-plo longioribus, vix crenulatis." *A. S. Hil.*

Var. β *glandulosa*; "caulibus minoribus, subcrassioribus, magis angulosis; foliis cauli magis adpressis, glandulis 2 nigris basi stipatis; panicula minore; floribus paulo majoribus." *A. S. Hil.*

HAB. in Brasiliæ prov. Rio de Janeiro, in arenosis maritimis prope lacum Araruama, haud longe a littoribus maris, *A. S. Hil.*—Var. β inter gramina rasa in loco maritimo arenosoque dicto *Ararangua*, ad fines provinciarum S. Catharinæ et *Rio Grande do Sul*.

"Caules plures, subfastigiati, 10–18-pollicares, basi suffruticosi, tenues, striati, superne complanati; rami alterni, erecti, cauli consimiles. Folia 6 lin. longa, vix ½ lin. lata, nervo unico in caulem decurrente. Foliola calycina coriacea, a medio usque ad acumen utroque margine glandulosa vel subglandulosa, dorso costata, exteriora 2 majora, ovato-lanceolata, cuspidata, interiora obovata, cuspidata. Styli graciles, longi, lutei. Capsula vix crassitudine seminis *Cannabis*, obsolete 5-loba. Semina subirregulariter ovata, complanata, tenuissime punctulata." *A. S. Hil.* (ex descr. fusiore excerpt.)

L. *littorale*, A. S. Hil. Fl. Bras. merid. I. p. 133.

44. L. *erigeroides*, A. S. Hil.—"L. glabrum, erectum, caule subsimplici; foliis alternis, subconfertis, linearibus, acutissimis, basi biglandulosis (*i. e.* glandulis stipularibus geminis); panicula corymbosa; petalis calyce duplo longioribus, vix crenulatis." *A. S. Hil.*

Hab. "in Brasiliæ prov. Cisplatina, prope prædium dictum *Estancia de Suarez*, haud longe a vico S. Josephi." *A. S. Hil.*

L. *erigeroides*, A. S. Hil. l. c. p. 132.

"Caulis erectus, 12–17-pollicaris, inferius crassitudine circiter pennæ Corvi vel tenuior, angulosus, basi lignosa vel sublignosa, sæpeque albido lutescente, teres vel teretiusculus. Folia 12–15 lin. longa, circiter 1–2 lin. lata, uninervia, nervo medio subtus prominente, supra impresso. Foliola calycina circiter 2 lin. longa, coriacea, acuminata, superius infra acumen glanduloso-serrata, glandulis atro-purpureis, exteriora ovato-lanceolata, interiora suborbiculari-lanceolata. Petala 4 lin. longa, obovata, obtusa. Stamina calyce subbreviora, dentibus filamentis interjectis longiusculis. Styli lutei, liberi. Stigmata parvula."

45. L. *junceum*, A. S. Hil.—"L. glabrum, erectum; foliis caulium adultorum alternis, remotis, cauli adpressis, linearibus, acutis; floribus laxe paniculatis, subglomeratis; petalis calyce 3–4-plo longioribus." *A. S. Hil.*

Hab. in Brasiliæ prov. *Minas Geraës*; in paludosis prope prædium vulgo *Fazenda do Riberaö*, haud longe ab urbe *S. Joaö* *del Rey*, et ad rivulum prædii dicti *Fazenda do Capitaö Joze Caetano de Mello*; *A. S. Hil.*

L. *junceum*, A. S. Hil. Fl. Bras. merid. I. p. 134, tab. 24.

"Planta facie fere *Bupleuri*, tenuissima. Caulis fruticosus, circiter 1½–2½ poll. longus, basi circiter crassitudine pennæ Corvi, angulosus, subsimplex vel parum ramosus, striatus, ramis erectis. Folia novellorum sterilium et quandoque inferiora ramorum debilium juniorumve opposita, per paria distantia, circiter 3–4 lin. longa, 1–½ lin. lata, sessilia, lanceolata, acuta, 3-nervia; pleraque (adultorum et fertilium caulium) alterna, valde distantia, caulique adpressa, et ideo, primo intuitu, vix manifesta, circiter 2–6 lin. longa, ⅔–1½ lin. lata, gradatim minora, sessilia, basi haud attenuata, sæpe subtrinervia. Panicula valde laxa, parum ramosa, (pauciflora). Foliola calycina circiter 1⅔ lin. longa, lanceolata, acuminata, infra acumen superius glanduloso-serrata, 5-nervia. Petala circiter 5–6 lin. longa, obovato-oblonga, integerrima. Stamina pistillo breviora, lutea; dentes interjecti minimi. Styli tenues. Stigmata parva, subpurpurea. Capsula globosa, obsolete 5-gona, diametro circiter 2½ lin., sæpe subpurpurea, dissepimentis spuriis incompletis. Semen circiter ⅔ lin. longum, valde complanatum, fulvum." *A. S. Hil.*

46. L. *brevifolium*, A. S. Hil. et Naud.—"L. foliis alternis, subulatis, eglandulosis, inferioribus brevissimis, distantibus; floribus in ramis paniculæ simplicis suberectæ spicatim dispositis, subsessilibus, conferte bracteatis."

Hab. in Brasiliæ merid. prov. *Rio Grande do Sul*; herb. Mus. Paris. ex auct.

L. *brevifolium*, A. S. Hil. et Naud. in Ann. des Sc. Nat. 2ème sér. vol. XVII. p. 30.

47. L. *oligophyllum*, Willd.—L. caulibus arcuato-ascendentibus, basi lignosis; foliis inferioribus paucissimis latiuscule linearibus suboppositis cæteris multo minoribus lineari-subulatis; glandulis stipularibus minutis geminis vel solitariis; floribus terminalibus solitariis; sepalis abrupte brevique acuminatis capsulam subrotundam colore badiam subæquantibus; stylis brevibus a basi ima liberis.

HAB. in regno Quitensi, prope pagum Paute, alt. 7000 ped.; *Prof. Jameson* in Hb. Hook.—verosimiliter in regione eadem stirpem typicam legerant olim cll. Humboldt et Bonpl., sed hanc in opere a cl. Kunthio digesto frustra quæsivi.

L. *oligophyllum,* Willd. Herb. ex R. et Sch. syst. VI. p. 758. Schiede in Linn. I. p. 68 (exclus. var. β et γ).

Obs. Comme je ne puis guère avoir un doute sur l'identité de la plante que j'ai sous les yeux avec celle que Willdenow reçut de l'illustre Humboldt, j'ai cru pouvoir en étendre la diagnose, en la dégageant des traits qui, dans la phrase caractéristique de Schiede, appartiennent sans aucun doute à des espèces différentes. Le vrai L. *oligophyllum* justifie en effet son nom. On voit quelques feuilles de 5 ou 6 lignes de long sur la partie inférieure de ses rameaux; toutes les autres sont subulées et très aigües. Les fleurs sont solitaires à l'extrèmité des rameaux.

48. L. *Polygaloides,* Planch.—L. caulibus e caudice multicipiti pluribus ascendentibus vel subprostratis; foliis linearibus confertis inferioribus suboppositis superioribus alternis; glandulis stipularibus 2; pedicellis terminalibus vel oppositifoliis calyce longioribus; stylis *basi breviter connatis*; petalis flavis calyce subtriplo longioribus; capsula subglobosa parva calyci subæquali.

HAB. in Peruviæ montibus *Cerro Pasco, Mathews,* no. 615, in Hbb. Hook. et Lindl; et loco dicto *Purruchucha*; *Cuming,* no. 586, *ibid.*

Habitus *Polygalæ amaræ*; radix crassa, tortuosa, alte descendens; rami crebri 4–5 poll. longi, graciles, duri, inferne denudati, apicem versus parum divisi; folia majora, 5–6 lin. longa, 1–1½ lata, summa sensim minora, in bracteas subulatas abeuntia. Pedicelli raro alares et tunc calyce fructifero duplo longiores; plerique terminales vel subterminales et oppositifolii, calyce dimidio longiores. Flores L. *oligophylli.* Styli inferne breve connati (in L. *oligophyllo* plane liberi!). Capsula grano *Piperis* minor, obtusiuscula, calyce arcte inclusa, stylorum basi persistente mucronulata.

Obs. Cette plante tient en quelque sorte un milieu entre le L. *prostratum* et le L. *oligophyllum,* Willd. Le caractère des styles la distingue très bien de l' une et de l' autre. Je soupçonne que c'est la plante de Hænke que Schiede cite comme la forme type de son L. *oligophyllum*. Mais comme la vraie plante de Willdenow est venue, à peu près sans aucun doute, des collections de Humboldt, et que je puis parfaitement la reconnaître dans les échantillons recueillis à Quito, c' est à elle qu' il faut laisser le droit incontestable de représenter le L. *oligophyllum*.

49. L. *prostratum*, Lamk.—L. glabrum; caulibus (ex uno abbreviato) pluribus adscendentibus vel prostratis (?), fertilibus apice pluries dichotomo-divisis foliosis; foliis lanceolato-linearibus vel lineari-lanceolatis acutiusculis caulinis basi attenuatis, membranaceis; glandulis stipularibus geminis vel solitariis vel obsoletis; floribus oppositifoliis; pedicellis calyce (sæpius) brevioribus; sepalis ovato-lanceolatis acutiusculis conspicue inæqualibus majore capsulam depresso-ovatam subobtusam superante.

Hab. in Peruvia, prope Limam, in collibus siccis, *Dombey* ex Lamk. et in Hb. Hook. ex. Hb. Gouan.

Facies *Polygalæ vulgaris*. Caulis primarius vetustus, apice abscissus, vix sesqui-pollicaris, tortuosus, crassitie pennæ corvinæ, sicut bases caulium lateralium, epidermide semidetersa flavescenti, nitida tectus. Caules secundarii graciles, aliis sterilibus debilibus, glaucis, fertilibus subpedalibus, crassitie fili emporetici, striatis, rubescentibus. Folia in caulibus omnibus alterna, secus partem indivisam lateralium crebra, internodiis multo longiora, erecto-patentia, unguicularia, 1½–2 lin. lata, consistentia illa *Euphorbiæ peplus* referentia, basi longe et sensim angustata; ramealia et floralia rachidi oblique adpressa, rigidiora, minus conspicue attenuata. Ramuli inflorescentiæ sat crebri, breves. Pedicelli fructiferi 1–2 lin. rarissime infimo 3 lin. longo. Sepala margine subglandulosa, rigida, uno ex exterioribus interdum interiorem subduplo superante. Capsula sæpius colore plus minus fusca. Flores expansos non vidi.

50. L. *Chamissonis*, Schiede.—"Caulibus adscendentibus basi lignescentibus, ramis alternis; foliis lanceolatis basi eglandulosis inferioribus suboppositis superioribus alternis; floribus opposi-

tifoliis terminalibusque; petalis flavis; stylis a basi ima liberis; stigmatibus capitatis; capsulis acutiusculis valvulis dorso planis."

HAB. in "America meridionali sub 37° grad. lat. aust. et quidem in regno Chilensi in clivis ad flumen Biobio," *De Chamisso* ex Schiede (indicatio loci natalis prioris valde ambigua; an ora orientalis et tunc ditio Platensis? an igitur stirps orientalis vere eadem ac occidentalis?)

L. *Chamissonis*, Schiede in Linn. I. p. 69.

L. *ramosissimum* (?), Claud. Gay, hist. fis. Chil. I. p. 463. (ex diagnosi nimis brevi). Hæc in maritimis prov. septentrionalium crescit.

"Caules e radice lignosa plures basi lignescentes, circiter quinquepollicares, superne in ramos alternos soluti. Flores pedunculati. Folia integerrima, uninervia, nervo marginibusque foliorum striis elevatis per caulem decurrentibus. Calycina foliola ovata acuminata denticulata trinervia. Corolla flava magnitudine L. *perennis*, obtusa. Filamenta linearia inferne paulum latiora, sterilia a me non observata." *Schiede.*

Obs. L' auteur cité rapporte a cette espèce avec un point de doute le *Linum aquilinum, foliis alternis lanceolatis, pedunculis bifloris* Molina, hist. nat. Chili, ed. germ. p. 126, qu'il dit être le même que le L. *perenne, luteum, polygonifolium*, vulgo *Nuancu Laguen*, Feuillée, Journ. III. tab. 22. M. Claude Gay de son côté adopte le nom de L. *aquilinum*, avec les mêmes synonymes, pour une espèce qui, d' après une description peu satisfaisante, parait se rapporter au *Linum Macraei*, Benth. Du reste, comme il est question, dans cette description, de styles en général (et par conséquent pas toujours) soudés, et que la soudure ou la liberté de ces organes est un caractère des plus constants chez les Lins, on doit présumer que M. Gay a confondu lui-même deux espèces sous le nom de L. *aquilinum*. Les synonymes en question sont donc bien loin d' être fixés et méritent d' ailleurs de tomber dans l' oubli, au lieu d' encombrer plus longtemps nos catalogues d' espèces.

51. L. *Macraei*, Benth.—"Glabrum; caulibus basi fruticosis;

foliis oppositis alternisve lanceolatis (sæpius lanceolato-linearibus) acuminatis rigidis (glandulis stipularibus 0); sepalis ovatis acuminatis, petalis calyce duplo longioribus; stylo corollam subæquante apice breviter 5-fido; stigmatibus globosis; capsulis acuto-mucronatis." *Benth.*

Hab. in regno Chilensi prope *Valparaiso, Mc. Rae* in Hbb. Lindl. et Hook.; *Cuming*, no. 127; prope urbem *Conception, Beechey* in Hb. Hook.

L. *Macraei*, Benth. in Bot. Reg. (anno 1830) sub folio 1326.

L. *Cumingii*? Lodd. Bot. Cab. tab. 1996? (icon rudis minime stirpem Cumingianam referens).

L. *aquilinum*, Cl. Gay, Hist. fis. Chil. p. 462, (saltem quoad stirpem stylis connatis donatam.)

Quoad synonymon L. *aquilini* Mol. conf. annotationem ad speciem precedentem.

Species distinctissima. Caulis primarius (?) vetustus pennam corvinam vel anserinam v. ultra crassus, denudatus, epidermide arida, flavescente, in longum sponte fissa vel profunde striata indutus, secundariis (interdum nullis) 1–3 poll. longis, denudatis, conferte ramulosis. Ramuli floridi ascendentes v. erecti, stricti, 3–4 poll. longi, apice tantum in corymbum pauci- vel pluriflorum divisi, angulato-striati. Folia conferta, sæpius erecto-imbricata et cauli semi-adpressa, plus minus oblique versa, rigida, lanceolato-linearia, acutissime cuspidata, interdum falcata, sessilia, intermedia unguicularia, 1½–2 lin. lata, paucissimis ex infimis oppositis, cæteris conferte alternis; floralibus subulatis, sæpius oppositis. Corymbi terminales sæpius compositi (nunc simplices vel ad pedicellos geminos v. subsolitarios reducti), ramis brevibus, confertis, apice 3–2 v. unifloris. Sepala acutissime cuspidata, margine glandulosa. Petala magnitudine eorum L. *tenuifolii.*

52. L. *Æthiopicum*, Thunb.—L. suffruticosum glaberrimum; foliis ovatis v. ovato-oblongis (nunc lineari-oblongis) oppositis decussato-imbricatis paribus superioribus internodiis brevioribus acutis rigidis; glandulis stipularibus geminis; corymbis compositis contractis sæpius multi- et densifloris; stylis ad me-

dium connatis, sepalis ovato-lanceolatis acuminatis, glanduloso-ciliatis capsula sub-globosa obtusa longioribus.

Hab. in Africa Capensi; *Houtniquas, Thunb.*; districtus *Uitenhage, Zeyh.* no. 399 in hb. Hook.; ibid. inter *Soomtesvlakte* et *Boschzemans river* in sabulosa planitie, infra altit. 500 ped. Octob., Drège (sub nomine L. *Æthiopici, b.* in Hb. Hook.)

L. Æthiopicum, Thunb. Prod. p. 57 et ejus Fl. Capensis (ed. Schult.) p. 277. (Specimen hujus plantæ e Thunbergio acceptum in herb. Linnæano asservatum est, quod fere absque dubio authenticum, quamvis tantum a Smithio nec ab inventore nomine L. *Æthiopici* sit insignitum.)

Species habitu robustiore quam affines. Caulis primarius (?) (in specimine inferne abscissus) crassitie pennæ anserinæ, sicut secundarii, cortice excoriato flavescente tectus. Caules secundarii sæpius ramos virgatos erectos, oppositos, 2–6-pollicares agentes. Rami teretes, lineis quatuor elevatis e basi foliorum decurrentibus striati, laterales interdum longi, graciles, flagelliformes, curvato-ascendentes, ramulis sterilibus vel passim floriferis crebriusculis ornati. Folia in parte inferiore ramorum conferta, in superiore magis dissita, nempe internodiis sæpius breviora, erecta vel patenti-erecta, (vetusta infima sæpe deflexa), omnia 3–4 lin. longa, 1–2 lin. lata, rigida, nitida, margine sæpius plana et lævia, mucronulata. Corymbi e cymulis simplicibus vel pluribus dichotomis, contractis, 3- vel pluri-floris constantes, inde 7–20-flori. Pedicelli floriferi calyce subduplo breviores, versus medium articulati. Sepala sæpius ovato-lanceolata, acute cuspidata, 3-nervia, capsulam grano *Piperis* subæqualem paulo superantia.

53. L. *pungens,* Planch.—L. fruticulosum glaberrimum; caulibus (v. ramis) virgatis sulcato-angulatis; foliis oppositis v. in parte superiore ramorum alternis anguste linearibus v. subulatis pungentibus margine obsolete involutis; glandulis stipularibus geminis; corymbis dichotomis laxis v. contractis; sepalis lineari-lanceolatis eximie cuspidatis conspicue glanduloso-ciliatis capsula ovata acuta longioribus; stylis fere a basi liberis.

Hab. in Africa Capensi, *Burke* in Hb. Hook.; *Zeyh.* no. 202, (coll. 1846.) (Hæc a cl. Drège in Linn. XIX. p. 609 male ad L. *thesioidem*, Bartl. referta est.)

Caulis primarius, more affinium denudatus, mox in ramos (vel, si velis, caules) virgatos, 12–16-pollicares, simplices vel iterum ramosos divisus. Rami lineis 6 elevatis striati, e quibus quatuor ex lateribus paris singuli foliorum, duo ex eorum nervis mediis decurrunt. Folia infima conferta, opposita internodiis 5–6-plo longiora, 5 lin. longa, 1 lin. lata, intermedia et superiora anguste linearia v. subulata, opposita v. alterna, internodiis breviora v. parum longiora, hæc patenti-erecta, 5–8 lin. lata, $\frac{1}{4}$–$\frac{1}{2}$ lin. longa, omnia rigida, crassiuscula, pungentia, uninervia. Inflorescentia L. *Æthiopici.* Pedicelli fructiferi calyce duplo breviores, apice articulati. Sepala 2–$\frac{1}{2}$ lin. longa, petalis duplo (?) breviora, trinervia, nervis lateralibus apice tantum conspicuis. Capsula ovata, grano *Piperis* subæqualis, calyce subduplo minor, acuta, styli basi brevi mucronata.

54. L. *Africanum,* L.—L. fruticulosum glabrum; caule (v. ramis) striatis; foliis oppositis (superioribus alternis) lanceolato- vel anguste-linearibus pungentibus; glandulis stipularibus 2; corymbo cymis demum laxis, fructibus (nempe distantibus) composito; sepalis exterioribus ovato-lanceolatis (interioribus ovatis) acuminatis brevi glanduloso-ciliatis capsulam breviter ovatam acutiusculam subæquantibus vel parum superantibus; stylis inferne connatis.

Hab. in Africa Capensi, *Forster* in hb. Hook.; *J. D. Hook, ibid.*; in Monte Tabulari, prope urbem *Cap, Eckl.* herb. un. itin. no. 477, *ibid.*

L. Africanum, L. Mant. p. 360, et herb!—Jacq. coll. III. p. 218, et Icon. rar. tab. 353.—Curtis, Bot. Mag. tab. 403 (icon mediocris).

Species a L. *pungente* cui habitu valde accedit caute distinguenda: sepalis minoribus, brevius cuspidatis, minus conspicue glanduloso-ciliatis, capsulam breviorem et latiorem subæquantibus, nec multo superantibus, præsertim stylis inferne connatis.

55. L. *adustum,* E. Mey.—L. fruticulosum elatum glabrum; caule (v. caulibus?) stricto supra medium in corymbum laxum

amplum abeunte; foliis alternis cauli semiadpressis longe linearibus pungentibus glaucescentibus; glandulis stipularibus 2; pedicellis fructiferis capsulæ ovatæ acutæ subæqualibus v. ea paulo longioribus; sepalis lanceolatis cuspidatis conspicue glanduloso-ciliatis capsula longioribus; stylis longis ad medium connatis.

HAB. in Africa Capensi, *Zeyh.* coll. anno 1846, no. 201; district. *George* inter *Bergvalei* et *Langevalei* (prope Zwartbastkraal) infra altit. 1000 ped., Novemb.; *Drège.*

L. *adustum* α, E. Mey. MSS. in herb. Hook. (L. adustum, E. Mey. β mihi ignotum.)

Species a L. *Africano* et affinibus certe distincta. Caulis adest (secundarius? nempe verosimiliter ab altero basilari primario avulsus) 1½–2-pedalis, (corymbo adjecto), inferne longe denudatus, ibidem teres et tenuiter pluristriatus, (nec angulatus), superne in ramos plures solutus alternos, aphyllos (nempe tantum ad furcationes vel ad florum insertionem foliis minutis, subulatis instructos), tenuiter sulcato-angulatus, spatio 3–6-pollicari nudus, apice in ramulos alternos vel rarius oppositos, remote paucifloros divisus. Folia (in speciminibus duobus) omnia alterna, 12–15 lin. longa, 1–1½ lin. lata, sessilia, parte inferiore cauli adpressa, superiore sæpius oblique versa, recurvo-patentia, in sicco glaucescentia, consistentia rigida; nervo unico utrinque prominulo et basi in caulem decurrente. Corymbus semi- v. subpedalis, ramis erecto patentibus. Fructus dum rami inflorescentiæ alterni sunt, (quod semper in inferioribus accidit) bracteæ oppositi, (inde revera terminales, quamvis laterales appareant); superiores sæpius alares vel ramulos extremos inflorescentiæ terminantes, bracteolis tunc oppositis vel suboppositis. Flores illis L. *Africani* majores, illis L. *tenuifolii* paulo minores, ante anthesim sæpe cernui. Sepala 2½ lin. longa, trinervia, nervis lateralibus obsoletis. Petala calyce plus quam duplo longiora, siccitate pallide flava. Styli petalis subæquales. Stigmata minuta, capitellata. Pedicelli fructiferi 2 lin. longi, apice articulati. Capsula grano *Piperis* paulo major, *Piso* minor, incomplete 10-locularis, fenestra semiseptorum semilanceolata.

Obs. M. Drège (Linnæa, vol. XIX, p. 609) donne le nom de *L. adustum,* E. Mey, *var. c.* comme synonyme du L. *juniperinum,* Eckl. et Zeyh. enum p. 34. Les deux plantes en question m' étant inconnues, et celle que je viens de décrire ne s' accordant pas avec la diagnose imparfaite du L. *juniperifolium,* j' ai dû adopter pour elle le nom qu' elle porte dans la collection de Drège, et rejeter la plante d' Eckl. et Zeyh. parmi les espèces douteuses.

56. L. *thesioides,* Bartl.—"L. suffruticosum glabrum; foliis sparsis linearibus acutis basi-eglandulosis; panicula corymbosa erecta; floribus breviter pedicellatis; sepalis ovatis acutis pectinato-ciliatis fructum æquantibus; petalis flavis calyce duplo longioribus." *Bartl.*

Hab. in Africa Capensi, in locis lapidoso-arenosis ad radices montium *Lewenberg* et *Winberg* prope urbem Cap.—*Eck. et Zeyh.* Enum.

L. *thesioides,* Bartl. in Linn. vol. VII. p. 540.

Huc fere absque dubitatione refero specimina stirpis cujus diagnosin et descriptionem fusiorem subjicio.

L. fruticulosum glabrum; caulibus secundariis crebris virgatis, superne subnudis et in corymbum multi- et confertiflorum abeuntibus; foliis alternis crebris erecto-imbricatis anguste linearibus pungentibus; glandulis stipularibus 0 v. solitariis v. geminis; floribus fructibusque parvis; stylis fere a basi ima liberis; sepalis anguste ovatis breve acuminatis bracteisque glanduloso-ciliatis, illis capsulam ovatam acutiusculam subæquantibus.

Hab. in Africa Capensi, *Mundt* et *Villette* in Hb. Hook.

Caules e caudice abbreviato fruticoso plures, ascendenti-erecti, corymbo adjecto, 6–12-pollicares, crassitie fili emporetici, basi foliis denudati, superne subnudi v. foliis distantibus adpressis præditi, infra medium dense foliosi, lineis e foliorum lateribus et e nervis mediis decurrentibus elevato-striati. Folia 4–8 lin. longa, vix semi-lineam lata, margine planiusculo lævia, nervo unico utrinque (præsertim subtus) prominente. Rami corymbi alterni, supremi tantum oppositi, inferiores 1–2 pollicares, in cymam fere regulariter dichotomam, floribus alaribus instructam desinentibus. Pedicelli fructiferi 1–2 lin. longi, capsulæ æqua-

les v. eam superantes, apice articulati. Sepala capsulæ magis adpressa quam in sp. affinibus, sicut bracteæ, ciliis glanduliferis longiusculis ornata, vix ultra lineam longa. Petala flava, non rite observata, sed evidenter illis L. *Africani* minora. Capsula ovata, acuminata, grano *Piperis* fere minor, septis semiseptisque piloso-ciliatis.

57. L. *Thunbergii*, Eckl. et Zeyh.—"L. suffruticosum suberectum glabrum; foliis alternis oppositis verticillatisve ellipticis v. lanceolato-oblongis mucronulatis, margine involutis; floribus corymbosis breviter pedicellatis; sepalis ovalibus carpella æquantibus; petalis flavis calyce duplo longioribus." *Eck. et Zeyh.*

Hab. in Africa Capensi et in Cafraria; prope Constantiam et *Tokay*, latere orientali montis *Tafelberg*, prope urbem *Cap*; in collibus ditionis *Adow* (district. Uitenhage); ad montem Winterberg (Cafraria); *Eck. et Zeyh.*

L. *Thunbergii*, Eckl et Zeyh. Enum. p. 35.

L. *quadrifolium*, Thunb. fl. Cap. (ed. Schult.) p. 277 ex auct.

Huc dubitanter refero specimina stirpis cujus diagnosis et descriptio sequuntur:

L. *Reichenbachii*, Planch., *MS. olim.*—L. fruticulosum; caulibus secundariis pluribus simplicibus v. trifurcato aut alterne ramosis inferne teretibus puberulis cæterum glaberrimis; foliis inferioribus sparsis oppositis et quaternis anguste oblongis intermediis linearibus v. oblongo-linearibus, summis floralibusque subulatis omnibus mucronato-pungentibus; corymbi laxi v. subconferti ramis unilateraliter fructiferis v. in cymam dichotomam divisis; pedicellis fructiferis capsula ovata acuta brevioribus; sepalis ovatis breviter acuminatis glanduloso-ciliatis capsulam subæquantibus; stylis distinctis.

Hab. in Africa australi, ultra coloniam Capensem, versus Cafrariam, secus amnem *Caledon River*, *Burke* in Hb. Hook.; et verosimiliter in colonia Capensi.

L. *Africanum*, Reich. icon. exot. I. tab. 46? (certe non *L. Africanum*, L.)

Planta tota circiter pedalis. Folia inferiora 5–8 lin. longa, 2 lin. lata, fere semper internodiis breviora, interdum omnia alterna v.

opposita, verticillis semper raris, rigide membranacea, glabra, uninervia. Petala calyce plus quam duplo longiora. Capsula grano *Piperis* subæqualis, semiseptis margine pilis paucis ciliatis. Semina oblonga, compressa, linea breviora, pallide fulva, nitida, lævissima.

58. L. *gracile,* Planch.—L. fruticulosum glaberrimum; caulibus secundariis simplicibus v. parum ramosis gracilibus tenuiter angulatis; foliis oppositis v. alternis anguste oblongis acutis rigide membranaceis inferioribus basi attenuatis; glandulis stipularibus 2; sepalis ovato-lanceolatis eximie cuspidatis capsulam breve ovatam superantibus, margine glanduloso-ciliatis; stylis longe supra medium connatis.

HAB. in Africa Capensi, *herb. Hook.*

Species ab affinibus L. *Thunbergii* et L. *quadrifolio* stylis longe connatis facillime dignoscenda. Rami steriles undique, fertiles a basi supra medium foliosi. Folia internodiis longiora v. breviora, fere omnia erecta, unguicularia, circiter 2 lin. lata, breviter mucronulata, rigida, attamen minus crassa quam in L. *Africano* et affinibus, marginibus haud involutis, tactu lævibus, nervo unico subtus prominente, venis nullis, superficie utraque puncticulis centro depressis, sub lente valida, particulas salinas referentibus conspersa, summa subulata cauli semi-adpressa, floralia margine glanduloso-ciliata. Inflorescentiæ sæpius pauciflore, ramis alternis, secundariis apice trifloris v. dichotome-cymosis. Pedicelli fructiferi erecti, $1\frac{1}{2}$–2 poll. longi, paulo supra medium articulati. Flores ante anthesim sæpius nutantes. Sepala trinervia, nervo medio prominente. Petala . . . . (in specimine imperfecta). Styli pars indivisa calyce plus duplo longior. Capsula grano *Piperis* paulo minor, apice obtusiuscula, septis margine piloso-ciliatis semiseptisque glabris, fenestra lata semielliptica. Semina compressa, pallide fulva, lævia, nitida.

59. L. *quadrifolium,* L.—L. fruticulosum glabrum; ramis secundariis (sæpius) acute tetragonis; foliis inferioribus 4–5-nis. v. oppositis, v. rarius alternis, sæpius patentibus v. subdeflexis ellipticis v. oblongis utrinque acutis rigide membranaceis superioribus sparsis alternis oblongis v. linearibus; glandulis stipu-

laribus 2; corymbo composito plurifloro; sepalis ovato-lanceolatis acuminatis minute glanduloso-ciliatis capsulam ovatam obtusiusculam subæquantibus, stylis fere a basi liberis.

HAB. in Africa Capensi, verosimiliter prope urbem *Cap*;—in monte *Paarlberg* (district. *Stellenbosch*) alt. 1000–2000 ped.—Nov. Decemb., *Drège*, secus amnem *Klipriver*, prope *Keurebooms river* (district. *George*) in collibus scopulosis, alt. 2000–3000 ped.; Novemb.; *Drège*.

L. *quadrifolium*, L. sp. p. 402, et herb!

Caulis primarius (v. uno e secundariis?) sæpius elongatus, gracilis, decurrentia foliorum oppositorum v. dorsi medii foliorum quaternorum quadristriatus, inde plus minus manifeste tetragonus, fere semper ramulos oppositos, laterales agens, interdum apice in ramos 4, umbellatos divisus. In frustulo speciminis hortensis, duo ex his ramulis lateralibus video flore unico intra folia sessile terminatos; sed speciminibus sylvestribus contra, ut in hortensibus melius evolutis, rami, superne foliis paucis ornati, in corymbum plus minus laxe divisum abeunt. Flores videntur magnitudine eorum L. *tenuis*, Desf. Pedicelli fructiferi calyce breviores, supra medium articulati. Capsula grano *Piperis* subæqualis, semiseptis glabris, septis ciliatis.

Obs. L. *quadrifolium* β *paniculatum*, E. Mey, in herb. Hook., qui *foliis inferioribus oppositis v. alternis lineari-oblongis, sicut basis caulis, utrinque pilosulis, superioribus oppositis distantibus linearibus v. subulatis rigidis glabris capsulaque acuta* gaudet, a stirpe typica certe differt et forsan ad L. *Thunbergii* (nostrum) spectat, quod tamen ex specimine unico fructifero et imperfecto affirmare noluerim.

60. L. *Emirnense*, Bojer.—L. herbaceum glabrum; caule tenello erecto; foliis parvis suboppositis superne confertis subimbricatis linearibus v. lanceolatis sessilibus uninerviis; glandulis stipularibus 2; floribus terminalibus solitariis v. laxe paniculatis pallide luteis; petalis calycem duplo superantibus; staminibus fere liberis; capsulis globosis acutis.

HAB. in pratis pascuis vallibusque humidis prope provinciam Emirnam insulæ *Madagascar, Bojer* in herb. Hook. (Specimina imperfecta.)

L. *Emirnense,* Bojer in Ann des Sc. Nat. 2ème sér. vol. XX, p. 99.

Sepala basi glandulis 2-nigris, illis foliorum consimilibus, aucta, quo charactere stirps ab affinibus eximie distinguitur.

61. L. *Schiedeanum,* Cham. et Schlecht.—"L. perenne glabrum; caulibusque e radice sublignescente pluribus gracilibus teretiusculis obsolete quadrinervibus subsimplicibus; foliis pseudo-verticillatis (4-nis) pseudo-oppositisque fere semper alternis ex obovato-lanceolatis et lineari-lanceolatis basi attenuatis sessilibus apice mucronulatis margine scabridis tenuiter 1- et triplinerviis; cymæ fastigiatæ ramis primariis alternis; bracteis sepalisque ovato-lanceolatis acutis glanduloso-serrulatis et fimbriatis, illis capsula parva acuta longioribus."

Hab. in sylvaticis prope *Jalapam, San Andres,* regni Mexicani; Aug., *Schiede* ex Cham. et Schl.

Diagnosis ex descriptione auctorum.—Folia ad summum 7 lin. longa, 2 lin. lata. Rami inflorescentiæ primarii axillares, alterni, in cymas abeunt pluries exacte dichotomas, ramis inæqualiter unilateraliter evolutis, post primam—quintam dichotomiam floribus abortu alterius rami solitariis bibracteatis ornati. Bracteæ lineares acutæ. Flores pentameri, flavi, parvi, brevissime pedicellati. Sepala connata. Fructus quam ille *Lini cathartici* paulo major.

Obs. Diagnosim et descriptionem subjicio stirpis Coulterianæ a me dubitanter huc refertæ.

L. *Coulterianum,* Planch. (*olim*).—L. fruticulosum glaberrimum; caulibus (v. ramis?) gracilibus sulcato-angulatis; foliis inferioribus 3–4-nis intermediis oppositis superioribus alternis omnibus lineari-oblongis acutiusculis rigide membranaceis; glandulis stipularibus 2; cymulis paucifloris corymbosis longe pedunculatis; pedicellis fructiferis alaribus v. oppositifoliis (vel terminalibus) calycem æquantibus (infimo interdum triplo longiore); floribus parvis; sepalis lanceolatis bracteisque glanduloso-ciliatis, illis capsulam parvam ovatam acutiusculam parum superantibus.

HAB. in regni Mexicani ditione Zimapan, *Dr. Coulter*, no. 758, in herb. Hook. a cl. Harvey comm.

Species L. 4-*folio* affinis, a *Schiedeano*, imprimis glabritie inflorescentiæ, foliis magis dissitis et minus frequenter verticillatis, et corymbis multo amplioribus forsan distinguenda. Caules (v. rami) duo adsunt a sese invicem et a caule (primario?) avulsi, sub inflorescentia circiter 7-pollicares, inflorescentiis ipsis 5–6-pollicaribus. Folia haud crebra, rarius verticillata, internodiis semper breviora, 5–7-lin. longa, 2–2½ lin. lata, inferiora basi attenuata erecto-patentia. Inflorescentiæ rami primarii circiter 3, alterni, spatio 2–3-pollicari plane nudi, superne bifurci, cum flore unico alari, ramulis circiter 2-pollicaribus, nudis, apice in cymulam 3–9-floram, contractam abeuntibus. Bracteæ oppositæ, subulatæ, glanduloso-ciliatæ, sæpius utrinque denticulo setiformi auctæ. Pedicelli fructiferi graciles, striatuli, apice tantum articulati, fere omnes 1–1½ lin. longi, infimo interdum 4 lin. longo. Flores illis L. *gallici* subæquales. Stylos non vidi. Sepala acuta, cuspidata, 1–1½ lin. longa, trinervia, nervo medio prominente. Capsula grano *Piperis* multo minor, semiseptis margine glabris.

62. L. *Cruciata*, Planch.—L. fruticulosum elatum inflorescentiæ ramis exceptis glabrum; caule primario elongato lateralibus fere ad apicem usque foliosis; foliis crebre verticillatis (4–5-nis) elliptico-lanceolatis utrinque acutis margine glanduliferis summis angustioribus alternis; corymbi floriferi parvi ramis apice cymoso-floriferis pedicellisque patenti-pilosulis; floribus parvis breviter pedicellatis confertiusculis; sepalis ovato-lanceolatis cuspidatis bracteisque glanduloso-ciliatis; stylis a basi liberis.

HAB. in regni Mexicani ditione *Tepic, Dr. Sinclair* in herb. Hook. a cl. Bentham comm.

L. *Schiedeanum,* Hook. et Arn. Bot. Beech. p. 411; Benth. Bot. of the Sulphur, 67; non Cham. et Schlecht.

Habitus *Galii.* Caulis (primarius?) 4–10-pollicaris, haud crassus rectus, teres, obsolete striatus, relliquias inflorescentiarum vetustarum ramis flavidis interspersas exhibens. Rami floriferi graciles, simplices v. bi- aut tri-furcati, ramo intermedio tunc iterum bifurcato, glaberrimi, acute pluristriati. Folia crebra, fere omnia verticillata et internodiis breviora, erecto-patentia v. patentia aut subdeflexa, 3–5 lin. longa, 1–1½ lin. lata, exacte elliptico-lanceolata, basi leviter angustata, apice breviter acuminata, sphacelato-mucronulata, margine vix eroso et hinc inde glandulis brevi- et crasse-stipitatis ornato, unde interdum exserte subdenticulato, uninervia, crassiuscule membranacea, siccitate rigida, fragilia, saturate viridia. Glandulæ stipulares pro folio quovis geminæ vel interdum quaternæ, una paris singuli alteræ tunc superposita, nigræ. Corymbi (floridi) rami 3–4, alterni v. subopposititi aut umbellato-terni, 1–½-pollicares, apice cymoso-paucidivisi, ramulis brevibus, 1–5-floris. Pedicelli florum alarium 1–½ lin. longi, terminalium breviores, omnes tenues, apice articulati. (Inflorescentiæ vetustæ, quæ post capsularum occasum secus caulem persistunt, ramulos exhibent pluries dichotome et alterne divisos, et longitudine fere tota pedicellis 2 lin. longis unilateraliter versis ornatos.) Flores illis L. *Gallici* fere minores. Sepala ovato-lanceolata v. lanceolata, glabra, 3-nervia, nervo medio prominente. Petala fugacia non vidi. Stigmata capitellata.

Obs. A L. *Schiedeano* evidenter differt habitu, vegetatione, foliis crebrius verticillatis, latioribus, margine glanduliferis et inflorescentiæ ramis, sicut pedicelli, pilosulis.

63. L. *tenellum*, Cham. et Schlecht.—L. perenne undique villis patentibus crispulis subviscosis hispidulum; caulibus gracilibus superne in cymas laxiusculas abeuntibus; foliis obovatis et lanceolatis v. ellipticis alternis v. passim oppositis aut 3–4-nis; glandulis stipularibus geminis; pedicellis capsulæ ovatæ subæqualibus v. ea duplo longioribus apicem versus articulatis; stylis a basi liberis; semiseptis capsulæ margine glabris.

Hab. in sylvaticis prope Jalapam regni Mexicani, *Schiede et Deppe* ex Cham. et Schl.; ibid, *Galeotti*, no. 7071 et 4042 in herb. Hook.; prope *Miradores*, prov. *Vera Cruz*, *Linden*, no. 822, ibid.

L. *tenellum*, Cham. et Schl. in Linn. V. p. 234.
Planta tota 6–8-pollicaris, gracilis. Folia ad extremum 5 lin. lata.
Flores et fructus circiter magnitudine illorum L. *cathartici.*

(*To be continued.*)

NOTICES OF BOOKS.

"*The* BRITISH DESMIDIEÆ," *by* JOHN RALFS, M.R.C.S., &c. *The Drawings by* EDWARD JENNER, A.L.S. London: Reeve, Benham, and Reeve. 1848.

We can scarcely speak in too high terms of commendation of this charming book, which is a most valuable contribution to British Botany. Although the talented Author had previously, in various papers, read at the meetings of the Edinburgh Botanical Society, and subsequently published in the Annals of Natural History, made us acquainted with many of the interesting species figured in the present Work, still the numerous forms, now for the first time described, testify to the value of this addition to Botanical literature. The Naturalist in taking up the volume will recognise many species which have been figured and described as infusory animalcules by Dr. Ehrenberg, in his splendid work "Die Infusionthierchen," but he will find the question as to their Animal or Vegetable nature well treated in the introductory pages of the present volume;—the opinions of those who have written on the subject in a philosophic manner are here brought fairly before the reader, and the author has succeeded, we think, in establishing satisfactorily the claim of these beautiful structures to a place in the vegetable kingdom.

To the physiologist the facts brought forward with reference to the growth and multiplication of cells, are of the highest interest. The author has clearly shewn that each separate frond of the *Desmidieæ* is a single vegetable cell, and he has described the apparent changes taking place in this during the growth of the species, in a very excellent manner:—"In the *Desmidieæ* the multiplication of the cells by repeated transverse divisions is full of interest, both on account of the remarkable manner in which it takes place, and because it unfolds, as I believe, the nature of the process in other families, and furnishes a valuable addition to our knowledge of their structure and physiology. The compressed and deeply restricted cells of *Euastrum* offer most favorable opportunities for ascertaining the manner of the division; for although the frond is really a single cell, yet this cell in all its stages appears like two, the segments being always distinct, even from the commencement. As the connecting portion is so small, and necessarily produces the new segments, which cannot arise from a broader base than its opening, these are at first very minute, though they rapidly increase in size. The segments are separated by the elongation of the connecting tube, which is converted into two roundish hyaline lobules. These lobules increase in size, acquire colour, and gradually put on the appearance of the old portions. Of course, as they increase, the original segments are pushed further asunder, and at length are disconnected, each taking with it a new segment to supply the place of that from which it had separated. It is curious to trace the progress in development of the new portions. At first they are devoid of colour, and have much the appearance of condensed gelatine, but as they increase in size the internal fluid acquires a green tint, which is at first very faint, but soon becomes darker; at length it assumes a granular state. At the same time the new segments increase in size and obtain their normal figure; the covering in some species shows the presence of puncta or granules; and lastly, in *Xanthidium* and *Staurastrum* the spines and processes make their appearance, beginning as new tubercles, and then lengthening until they attain their perfect form and size; but complete separation frequently occurs before the whole process is completed. This singular process is repeated again and again, so that the older segments are united successively, as it were, with many generations."

The mode of reproduction in these minute plants, seeming as it does to throw much light upon the same process in the higher tribes of plants, is another part of the subject of especial interest to the Physiologist, and we will allow the author to speak in his own words. He states (at p. 9 to 11.) :—"The spontaneous division of the frond is included by some writers amongst the modes of reproduction; but this is not strictly correct, for it is rather the manner in which the individual plant grows, since all the cells arrive at maturity nearly at the same period and terminate their existence about the same time. The *Desmidieæ* are most probably reproduced only in two modes; one by the escape of the granular contents of the mature frond, and the other by the formation of sporangia, the result of the coupling of the cells. When the cells approach maturity, molecular movements may be at times noticed in their contents, precisely similar to what has been described by Agardh and others, as occurring in the *Confervæ*. This movement has been aptly termed a swarming. It has been seen by numerous observers,—in this country by Messrs. Dalrymple, Jenner, Thwaites, Sidebotham, Dr. Dickie and others. The cause of this sudden commotion cannot be ascertained; but I have met with it more frequently in specimens that have been kept some days than in fresh gathered ones. When released by the opening of the suture, the granules will still move, but more rapidly and to a greater distance. With the subsequent history of these granules I am altogether unacquainted, but I conclude that it is similar to what has been traced in other Algæ. The second mode of reproduction is by coupling, and the formation of sporangia. A communication is established between two cells, and a seedlike mass is formed in the same manner as in the *Conjugatæ*. This is green and granular at first, but soons becomes of a homogeneous appearance and of a brown, or even reddish colour. There are however some variations in the process in the two families which require notice. In the *Conjugatæ*, the cells conjugate whilst still forming parts of a filament; but in the *Desmidieæ*, the filamentous species almost invariably separate into single joints before their conjugation, and in most of the species the valves of the cells become detached after they are emptied of their contents. In many genera the sporangia remain smooth and unaltered; in others they become granulated, tuberculated, or spinous; the spines being either simple or forked at the apex. In fact a sporangium may pass successively through all these stages, and hence may so change its appearance that its different states are liable to be taken for sporangia belonging to different species. In *Tiresias* also we sometimes meet with sporangia bearing spines, but in that genus they are arranged like the spokes of a wheel, and not scattered as in the *Desmidieæ*. What is the nature of the sporangia and why so complicated a process is necessary, since the species is also propagated by means of the granules or zoospores which escape from the ruptured cell, are questions to which we cannot, in the present state of science, return a satisfactory answer. The sporangia I consider *capsules*; and this view seems to be confirmed by the experience of Mr. Jenner, who informs me that the covering of the sporangium swells, and a mucus is secreted, in which minute fronds appear and, by their increase, at length rupture the attenuated covering. That some purpose, distinct from that performed by the zoospores, is served by the coupling of the cells and formation of the sporangium cannot be doubted; for where we can trace the operations of nature, we find that nothing is useless or in vain; nor is it reasonable to suppose that this complicated process should fulfill no other purpose than one already provided for without it. The sporangia are most abundant in spring before the pools dry up; and I would suggest, as no improbable conjecture, that the zoospores may be *gemmæ*, analogous to those present in *Marchantia polymorpha* and *Lunularia vulgaris*, and that they possess merely a limited vitality, which is destroyed unless they are at once placed in circumstances favourable to their growth, whilst on the other hand, in the conjugated cells, some important change takes place during the commingling of their contents and the formation of the sporangium, like what happens in the production of seeds in general, which renders the sporangia capable of retaining the vital principle uninjured throughout long periods of drought."

We quite agree with Mr. Ralfs, in considering the contents of the sporangium as the real reproductive matter of the species; we re also, with him, much disposed to view the zoospores as probably gemmæ, in which however we should consider the function of the latter to be that of multiplying the individual plant, rather than of reproducing the species.

The following extracts (pages 12 and 13,) will be interesting to the Geologist, since they relate to bodies coming under his observation not unfrequently, and respecting the nature of which much uncertainty has been felt, though the matter seems now, by the researches of Mr. Ralfs and others, to be set completely at rest:—"That the orbicular spinous bodies so frequent in flint are fossil sporangia of *Desmidieæ* cannot, I think, be doubtful when they are compared with figures of recent ones. Indeed one celebrated geologist, Dr. G. Mantell, who, in his "Medals of Creation," without any misgiving, had adopted Ehrenberg's ideas concerning them, has changed his opinion, and in his last work regards them as having been reproductive bodies, although he is still uncertain whether they are of vegetable origin. Ehrenberg and his followers describe these bodies as fossil species of *Xanthidium*, but no doubt erroneously, since their structure is very different. For the true *Xanthidium* has a compressed, bipartite, and bivalved cell, whilst these fossils have a globose and entire one. The fossil forms vary like, recent sporangia, in being smooth, bristly or furnished with spines, which in some are simple, and in others branched at the extremity. Sometimes too, a membrane may be traced, even more distinctly than in recent specimens, either covering the species or entangled with them. Some writers describe the fossil forms as having been siliceous in their living state, but Mr. Williamson informs me that he possesses specimens which exhibit bent spines and torn margins, and thus wholly contradict the idea that they were siliceous before they were imbedded in the flint."

We must not omit to bear testimony to the great beauty and perfect accuracy of the drawings which illustrate the work; they do credit to the pencil of the Author's able coadjutor Mr. Edward Jenner, whose valuable assistance has been fully and properly acknowledged by Mr. Ralfs in the preface to the volume: and we have great pleasure in taking this opportunity of expressing the satisfaction we have experienced in finding throughout the book that spirit of fairness towards others, whose researches have been made use of, which always adds so much to our esteem for an author, and to our confidence in what he advances on the result of his own investigations.

The value of the work to them who would wish to examine for themselves the numerous beautiful structures therein described and figured, is much increased by the full directions given for finding and securing specimens, and for preserving them for future microscopical examination.

Many have expressed to us a wish that the *Diatomaceæ*, an equally interesting and beautiful group of minute plants, may be illustrated, in a similar manner with the *Desmidieæ*, by the same talented pen and pencil, and we feel quite sure that the author's reputation would insure for such a work a favourable reception by the public. We could have wished that the introduction to the present volume had not been put into type until the last possible moment, since the views therein expressed by the author with reference to the *Diatomaceæ* must have undergone some modification when he became acquainted with Mr. Thwaites's discoveries as to their mode of reproduction, announced some months ago in the "Annals of Natural History;" we trust, however, soon to hear that Mr. Ralfs is again devoting his particular attention to this tribe of plants, with a view to the production of such a work as has been suggested; when we doubt not that his excellent powers of observation will bring to our knowledge many interesting phenomena of vegetable life of the highest physiological importance.

PLANTES NOUVELLES OU RARES d' AMERIQUE; par STEPHANO MORICAND. Geneva: 1846, 4to.

This work, containing outline figures, and occasionally a few dissections, of new or rare plants of S. America, chiefly of Brazil, is brought to a conclusion in one vol. 4to., with 173 pages of letterpress and 100 plates. We could wish from so rich a field, that more interesting subjects had been chosen than those that appear here, for such would have much increased the value of the work.

Sur la Famille des LINEES; *par* J. E. PLANCHON, *Docteur-ès-Sciences.*

(*Continued from page* 501.)

64. L. *scabrellum,* Planch.—L. undique cinereo-scabrellum; caule (secundario?) stricto superne in ramos plures fastigiatos apice paucifloros diviso; foliis parvis conferte alternis erecto-imbricatis linearibus acutis; glandulis stipularibus 2; floribus breviter pedicellatis; sepalis ovato-lanceolatis cuspidatis capsulam ovatam acutam superantibus; petalis flavis cuneato-oblongis apice truncatis calyce plus duplo longioribus; stylis a basi liberis.

HAB. in regni Mexicani ditione *Zimapan, Dr. Coulter,* no. 754 in herb. Hook. a cl. Harvey comm.

Caules in specimine simplices, (sed verosimiliter e basi communi avulsi), circiter 7–8-pollicares, graciles, lignescentes, foliis arrectis undique tecti. Folia sessilia, linearia, 3–4 lin. longa, semilineam v. ultra lata, sæpius semitorta et apice acuto leviter incurvo-falcata, superiora ad basim ramulorum sæpius latiora, cæterum sensim in bracteas subulatas abeuntia. Flores sat conferti, eis L. *Gallici* subæquales. Pedicelli superiores calyce breviores, inferiores et præsertim fructiferi longiores. Sepala acutissima trinervia. Stigmata capitellata. Capsula grano *Piperis* minor.

Ser. ****Halolinum, vide vol. VI., p. 598.

65. L. *tenue,* Desf.—L. annuum glaberrimum; caule lævi sæpius sulcato; foliis anguste-linearibus v. lineari-lanceolatis 1–3-nerviis acutissimis, margine vix scabriusculis; corymbi compositi ramis apice cymiferis, pedicellis fructiferis demum unilateraliter cymoso-racemosis calyce paulo brevioribus (infimis interdum duplo longioribus); sepalis cuspidatis corolla triplo brevioribus, capsulam acutam superantibus.

HAB. in Lusitania, Hispania australi, et Mauritania.—Lusitania, circa *Thomar* et in *Sierra da Arrabida, Brotero* flor.—“ Hispania, in arenosis regionis calidæ provinciæ Granatensis, rarius in regionem montanam ascendens; circa *Alhaurin* copiose, circa *Marbella, Estepona, San Roque,* ad radices *Sierra Nevada* prope pagum *la Subia* alt. 0—3000′," *Boiss.*; Sierra Nevada, *Hb. Hook.* a cl. Kunze. comm.; Mauritania, in collibus incultis Algeriæ, *Hb. Hook.*; in regno Maroccano, *Schousb.*

L. *tenue,* Desf. Fl. Atl. vol. I. p. 280, tab. 81.

L. *melianthum,* Brotero, Fl. Lusit. vol. I. p. 484 (monente cl. Boiss.)

L. *virgatum, Schousb.* ex Saltzm.

L. *scabrum,* Kunze in Hb. Hook.

Sepala 1–3-nervia margine ciliato-glandulifera. Stigmata longiuscule lineari-clavata.

66. L. *maritimum,* L.—L. perenne glaberrimum læve glaucescens; foliis elliptico-lanceolatis v. linearibus, inferioribus oppositis, pedicellis fructiferis capsula triente v. duplo longioribus; sepalis ovatis breviter cuspidatis petalis plus triplo brevioribus, capsulæ ovato-globosæ, subobtusa parum longioribus v. subæqualibus.

Hab. in maritimis v. submaritimis Europæ australis, occidentalis, et Mauritaniæ.—Gallia occidentalis, prope *Nantes* (Loire inférieure), Lat. circit. 47°. 12′. fide cl. Mutel. Fl. Franç. (Locus natalis, dum mappam geographicam distributiones Linearum exstruxi, mihi ignotus.)—Gallia australis, prope Monspelium (semper in maritimis); *ipse* olim; Delphinatus, prope Seuze et Courteizon; *Vill.* ex Mut.—Italia, prope *Nice*; ex *Mutel*; Istria, prope *Tergesti*; *Benth. Mull.* in herb. Hook.—Sardinia; *Mull.* in herb Hook. *Moris.*—Corsica; *Soleirol.*—Hispania, in paludosis maritimis (provinciæ Granatensis), *Malaga en la Dehesilla*; *Haenseler* ex Boiss. et ad rivulos regionis montanæ inter *Granada* et *Guejar de la Sierra,* alt. 0—3000′." *Boiss.*—Mauritania, prope *la Calle*; Bové in herb. Hook. (forma sepalis longioribus et magis acuminatis a stirpe gemina paululum recedens.)

L. maritimum, L. sp. I. p. 400. et herb. no. 14. (specimen ex hort. Ups.)—Reichenb. icon. Fl. Germ. fig. 5172 et 5173. β. (sub.

nomine *L. Davurici* Schult. quæ species in plantam hortensem exstructa verosimiliter in Davuria non provenit.)

Subgen. IV. Syllinum, Griseb. spicil. p. 115—*vide supra*, p. 598.

Ser. I, Limoniopsis, Planch. *vide supra*, ibid.

67. L. *aretioides*, Boiss.—"L. perenne dense pulvinato-cæspitosum glaberrimum; caudiculis dense foliorum vetustorum relliquiis fibrillosis vestitis apice foliosis unifloris; foliis ad apicem caulium fasciculatis anguste linearibus subsetaceis brevibus acutiusculis uninerviis albo marginatis floralibus apice dilatato-subspathulatis; floribus in cæspite sessilibus; calycis lobis ovatis acuminatis albo marginatis serrulatis eglandulosis; petalis obovatis luteis calyce duplo longioribus, capsula flavescente rotunda calyce longiore." *Boiss.*

Hab. "in regione alpina summa, in cacumine montis Cadmi supra *Geyra*, et Tmoli, supra vallem *Bozdag*." *Boiss.* in Hb. Hook.

68. L. *Cariense*, Boiss.—"L. perenne basi suffruticosum multicaule totum sub lente parce puberulum glaucescens; caulibus humilibus simplicibus acute augulatis foliosis; foliis lineari-subspathulatis uninerviis carinatis obtusis breviter mucronulatis margine ciliatulis infimis minimis imbricato approximatis cæteris majoribus sparsis; floribus paucis ad apices caulium laxe corymbosis; sepalis glabris, anguste lanceolatis ciliatulis corolla lutea 3-plo brevioribus; staminibus longitudine calycis; stylis eo longioribus: capsula calyce paulo breviore." *Boiss.*

Hab. in Caria. *C. Pinard* in herb. Hook. a cl. Boiss. communicat.

L. Cariense, Boiss. diagn. pl. nov. or. V. p. 86.

69. *L. flavum*, L.—L. fruticulosum glaberrimum; ramis (7–12-pollicaribus) profunde sulcato-angulatis; foliis spathulato-oblongis (superioribus lanceolato-linearibus) 1–3-nerviis floralibus subulatis oppositis; glandulis stipularibus 2; cymæ fastigiatæ ramis primariis subæquilongis; sepalis lanceolatis breviter cuspidatis corolla campanulata 3–4-plo brevioribus capsulam acutam æquantibus v. vix superantibus.

Var. *β. Ucranicum*, Griseb.—omni parte minus; cyma pauciflora (ex specimine imperfecto mihi non satis notum).

HAB. forma typica in Europa australi-orientali, a Carinthia in Rossiam Australem et in provinciis Caucasicis.—Germania, a Carinthia per Styriam in Austriam, Bohemiam, et Moraviam, nec non prope *Ulm.* "*Koch.* syn.—Thracia: *Friwaldsky, Griseb.*—Rossia; ad *Djomaflur* et ad Volgam; *Pallas* in herb. Hook. (sub nomine L. campanulati.)—Rossia media, Volhynia, *Kursk, Tambou, Pensa, Simbirsk,* et alibi; ad Volgam mediam prope *Ufa, Orenburg.*" Ledeb. Fl. Ross.—Ross. australis: *Kiev.*, Podolia, *Cherson* ad Tanaim." Ledeb. l. c. Odessa; *Besser* in herb. Hook. (sub nomine L. Taurici)—Provinciæ Caucasicæ, promont. Cauc. occid. prope acidulam *Narzana* alt. 500 hexam. C. A. Mey; Iberia, *Wilhems*; prope Helenendorf; Hohenh." ex Ledeb. Fl. Ross.

Obs. Stirps in variis locis Galliæ australis sub nomine *L. flavi* a cl. Mut. (Fl. Franç., p. 184.) indicata mihi plane ignota.

Var. β. in Thracia, *Griseb.* in herb. Hook. (an non etiam in Ucrania, ut nomine intelligitur.)

L. flavum, L. sp. I. p. 279. et herb! Reich. icon. Fl. Germ. f. 5175. et 5175. β. (hæc sub nomine *L. taurici* Willd. seu *Lini flavi* var. *uninervis* Roch. forma augustifolia, humilior et gracilior stirpis typicæ.)

L. glandulosum ε, D. C. prod. I. p. 425.

70. *L. capitatum,* Kit.—L. fruticulosum humile glabrum; foliis infimis rosulatis spathulatis margine glabris (rectius lævibus?) superioribus lanceolatis acutis acuminatisque margine scabris; glandulis stipularibus 2; cyma 3–10-flora in capitulum contracta; sepalis lanceolatis acuminatis subserratis.

HAB. in alpe Croatica *Plissivieza*; Kit. ex Schult. etiam prope Ulm; *Petitpierre* in herb. Smith.

L. capitatum, Kit. ex Ræm. syst. vol. VI, p. 751.—Reich. icon. Fl. Germ. f. 5174.

Species mihi plane dubia. Specimen quod in herb. Smithio vidi a L. *flavo* diversum censui; sed nunc hoc mihi non adest, et igitur ex descriptione Schultesiana et icone Reichenbachia diagnosim exstruere coactus sum.

(*L. capitatum,* Griseb. in herb. Hook. (ut synonymon ad *L.*

flavum var. *Alpinum* Griseb. (MSS.?) refertum foliis superioribus margine crispo fimbriiferis, et habitu ad *L. Cariense* accedit.)

(*L. serrulatum*, Bertol. a cl. Reich. in textu ad icon. 5174, ad *L. capitatum* refertum, mihi plane ignotum est; nec flora Italica præclari auctoris mihi suppetit.)

71. *L. Pamphylicum*, Boiss. et Heldr.—L. fruticulosum glabrum humile; caulibus virgatis tenuiter lineato-angulatis; foliis alternis lanceolato-linearibus acutissime cuspidatis glauco-viridibus uninerviis margine leviter scabris floralibus suboppositis; glandulis stipularibus 2 minutis; cymis paucifloris terminalibus contractis; floribus subsessilibus; sepalis e basi ovata lanceolato-cuspidatis margine minutissime denticulatis petalis plus duplo brevioribus.

Diagnosis e specimine Kurdistanico (in herb. Lindl.) olim a me in schedulis descripto et fere absque dubio ad stirpem Heldreichianam spectante. Hæc ultima tamen (quam vidi) sub oculis non adest.

Hab. in Pamphylia.; *Heldreich* in herb. Hook. et in regno Kurdistano. *Brandt* in herb. Lindl.

Caudiculi abbreviati lignosi denudati, tortuosi, epidermide grisea vestiti, vix pollicares caules 6–7-pollicares virgatos agentes. Folia (in parte infima caulium sub anthesi nulla) erecta, internodiis longiora, a basi ad apicem caulis sensim majora, suprema vix 1-poll. longa, 2 lin. lata, omnia plane sessilia, apice acutissime subfalcata. Cyma circiter 7-flora, ramulis secundariis oppositis. Petala pallide flava.

Obs. Species inter *L. flavum* et L. *campanulatum* quasi media, a priore distincta foliis lanceolato-linearibus, acuminatis, nec subspathulatis et trinerviis, floribus paucioribus, densius congestis; a posteriore floribus paulo minoribus et corymbo contracto.

72. *L. campanulatum*, L.—L. fruticulosum glabrum vix glaucescens; foliis inferioribus spathulatis confertis supremis lanceolato-linearibus oppositis; glandulis stipularibus 2; cymæ ramulis paucis inæqualibus demum sparsifloris; sepalis lanceolato-linearibus cuspidatis ultra 4 lin. longis margine membranaceo

vix erosulis corolla infundibuliformi campanulata subtriplo brevioribus capsulam anguste ovatam acuminatam superantibus.

Hab. in Gallia australi—prope Monspelium; *Benth.* in herb. Hook. et *ipse* olim.—in Delphinatu prope *Ventavon*; *Villars* —in Pyreneis prope *Villefranche*; *Lapeyr* ex Mutel. Fl. Franç. (hiloci natales mihi dubii.)

L. campanulatum, L. sp. p. 400.—Reich. icon. Fl. Germ. f. 5173. (an igitur stirps Germanica? sed cl. Koch illam e synopsi excludit, nec Fl. Germanica cl. Reichenbachii mihi suppetit, ut dubia solvere possim.)

73. L. *Simsii*, Planch.—L. fruticosum 2–3-pedale (et ultra?); ramis pluries divisis denudatis ramulis floridis longiusculis, foliosis superne in cymam laxam demum remotifloram abeuntibus; foliis anguste spathulato-oblongis inferioribus subconfertis; cymæ ramis alternis demum elongatis; sepalis lanceolato-linearibus corolla 3–4-plo brevioribus; petalis flavis concoloribus.

Hab. . . . . ex Oriente in hortos Angliæ a Sibthorpio (ann. 1788) introducta. In horto Kewensi vidi ipse stirpem cultam sub nomine *L. arborei*, in omnibus cum icone Simsiana, sed minime cum illa *L. arborei*, Fl. Græca tab. 305, congruentem. Specimina hujus mihi non suppetunt, et ideo ex icone Simsiana character specificum exstruxi.

L. *arboreum*, Sims. Bot. Mag. tab. 234. exclus. syn. Linn? non Sibth. et Sm. Fl. Græc.

Obs. Il suffit de jeter un coup d'œil sur la figure du *L. arboreum* du Botanical Magazine et sur celle du *L. arboreum* du Flora Græca pour voir qu'elles représentent deux plantes différentes. Le nom d'*arboreum* ne convient pas plus à l'une qu'à l'autre, et devrait probablement être rejeté, d'autant plus que Linnæus n'ayant fait cette espèce que sur l'autorité d'une figure probablement grossière (je n'ai pas sous les yeux l'ouvrage de Prosper Alpin ou elle se trouve), il est sans doute difficile de savoir quel en est le vrai type. J'ai conservé le nom d'*arboreum* à la plante du Flora Græca à cause de la localité, qui est explicitement indiquée, tandis que celle de la plante de Sims est comprise sous le terme vague d'*Orient*.

74. *L. arboreum,* Sibth. et Sm.—L. fruticulosum 3-pedale glabrum læve; caulibus ramosis denudatis; ramis floridis longiusculis crassis a basi ad apicem subæqualiter foliosis; foliis recurvo-patentibus alternis internodiis multo longioribus recurvo-patentibus spathulatis obtusiusculis trinerviis; cymulis pluribus paucifloris in paniculam basi foliosam multifloram terminalem collectis; floribus congestis breviter pedicellatis; sepalis obovatis acuminatis corolla duplo brevioribus; petalis obovatis, flavis lineis aurantiacis vittatis. (Charact. ex icone Fl. Græca et e descript.)

Hab. in montibus Sphacioticis elatioribus Cretæ. *Sibth. et Sm.*

L. arboreum, Sibth. et Sm. Fl. Græca. vol. 4. tab. 305. excl. syn. Sims. et Ait.?

Obs. Corolla ex icone magnitudine illæ *L. flavi,* illa *L. Simsii* conspicue brevior, imprimis ob tubi brevitatem. Charactere illo stirps præ *L. flavum* sese habet, ut *Lin. Simsii* præ L. *campanulatum.* Styli ex Smithio variant inter numerum quinarium normale et binarium. Glandulæ stipulares in icone desiderantur, sed fere absque dubio in natura observandæ.

75. L. *cæspitosum,* Sibth. et Sm.—L. fruticulosum glaberrimum glaucescens; ramis (v. caulibus) e caudice crasso multicipiti pluribus abbreviatis basi rosulato-foliosis apice in cymam paucifloram abeuntibus; foliis acutis infimis ramealibusque spathulatis floralibus oblongo-linearibus alternis; floribus in cyma 5–2 v. subinde solitariis; sepalis ovato-lanceolatis capsulam subglobosam acuminatam subæquantibus; stylis a basi distinctis.

β? *Sieberi*: elatius, caule fruticoso crasso ramisque lateralibus numerosis sæpius intricato-tortuosis denudatis ramulis extremis 2–4-pollicaribus (cyma adjecta) foliis-ramealibus oblongo-linearibus summis basim cymæ stipantibus oppositis v. suboppositis v. alternis; cyma contracta; sepalis eximie cuspidatis. An sp. distincta?

Hab. forma typica in montibus elatioribus Cretæ. *Sibth. et Sm.* (an locus natalis certus?)—var. β. in Creta, ad Therisk. *Sieb.*

L. cæspitosum, Sibth. et Sm. Fl. Græca, tab. 306.

Var. β. *L. arboreum*, Sieb. non Sibth. et Sm.

An. ad varietatem β. tradendum *L. globulariæfolium*, Poir. Encycl. supp. III. p. 754, quamvis calyces obtusi et flores pedunculati obstare videantur, quum descriptiones Poiretianæ sæpius fallaces et minime accuratæ.

Descriptio var. β.—Fruticulus habitu *Iberidis sempervirentis* 1–1½-pedalis (?). Caulis (in speciminibus Sieberianis inferne abscissus) diametro circiter 2–2½, sæpius tortuosus, hinc inde ramos laterales, alternos, denudatos, divaricatos, v. patenti-erectos agens, mox iterum trifurcato v. umbellato-ramulosus. Ramuli extremi 1½–4-pollicares, aliis sterilibus, aliis apice cyma subcapitata 3–7-flora terminatis, lineis e foliorum lateribus decurrentibus foliorum striatis. Folia in parte inferiore ramulorum sat conferta alterna spathulata circiter pollicaria, 2–3 lin. lata, acutiuscula v. subobtusa sphacelato-submucronulata crassa avenia nervo medio utrinque prominulo, in facie supera infra apicem evanescente; ramealia internodiis 2–5-plo longiora, patenti-erecta, sæpius oblongo-linearia, nunc apice paulo latiora, rarissime spathulata 3–4 lin. longa, 1-lin. lata acuta v. brevi acuminata, summa duo ad basim corymbi opposita v. subopposita v. alterna, floralia linearia v. subulata calyce breviora. Glandulæ stipulares 2, nigræ. Flores in cyma regulariter semel v. bis trifurca, aut subalterne divisa, brevissime pedicellati, illis *L. campanulati*, ut videtur, paulo minores. Sepala inæqualia, exteriora 3 lanceolata in cuspidem acutissimum subrecurvum producta, interiora 2 ovata, abrupte cuspidata, margine scarioso minute erosa, cæterum omnia herbacea membranacea, siccitate viridia, nervo dorsali longe infra apicem evanescente. Pedicelli fructiferi 1½–2 lin. longi, alterni v. oppositii cum altero interjecto, supra medium articulati. Capsula calyci subæqualis? Piso paulo major, subglobosa, brevi acuminata; fenestra semiseptorum latissima.

Obs. En comparant avec la figure citée du *Flora Græca* la plante que je viens de décrire comme une variété du *L. cæspitosum*, on doit croire que cette dernière constitue une espèce distincte. Cependant est-ce un simple ramuscule de cette plante que

porte dans l' herbier de Smith le nom de *L. cæspitosum*; et quoique cet échantillon tronqué ne laisse pas deviner s'il a été pris sur un buisson d' un pied et demi de hauteur, ou sur un dont les branches inférieures s' élevaient à peine d' une pouce, mes souvenirs me représentent le fragment en question comme identique en tous points avec un des nombreux ramuscules de la plante que j'ai décrite. Celle-ci ne saurait être le *L. arboreum* du *Flora Græca,* mais c'est probablement à elle que se rapporte la phrase caractérisque de Tournefort: *Linum Creticum fruticosum, foliis* Globulariæ, *flore luteo.* Si Poiret a fait entrer dans la diagnose de cette dernière plante (qu' il a décrite sous le nom de *L. Globulariæfolium*) l' expression de *laciniis calycinis obtusis,* c'est peut-être parceque ces parties ont été tronquées par quelque accident dans l' échantillon qu' il avait sous les yeux; car le caractère en question serait insolite et inattendu dans aucune espèce du genre.

J' ai décrit avec détail la plante de Sieber, parcequ' elle pourrait bien être distincte de celle du *Flora Græca.* Je vois, en effet, une plante* récoltée par Aucher sur le Mont Athos (où Sibthorpe a herborisé), et qui parait ne différer du *Linum cæspitosum,* Fl. Græca, que par ses feuilles inférieures le plus souvent *compliquées* (*complicata*), et celles des rameaux qui sont moins attenuées à la base, et cette espèce quelle qu' elle soit diffère certainement de mon Lin. *cæspitosum β Sieberi.* Malheureusement l' échantillon d' Aucher est fort imparfait, et ne peut être identifié avec entière certitude avec aucune autre. Mais n' est-il pas possible que la figure du *L. cæspitosum* se rapporte en effet à elle, et que la localité de Crète aura été plus tard substitué par erreur à celle du Mont Athos? Ou bien l' espèce serait-elle commune aux deux endroits? Voilà des questions qui sont pour moi insolubles, mais que de meilleurs matériaux que ceux qui sont à ma portée rendront peutêtre facile à M. Boissier, ou à tout autre des botanistes qui jettent tous les jours une nouvelle lumière sur la flore si riche de ces contrées.

76. L. *nodiflorum, L.*—L. annuum glaberrimum, caulibus ramisque profunde sulcatis, foliis oblongo-lanceolatis, inferioribus

---

* C'est le L. *iberidifolium,* Auch. MSS. no. 837.

basi plus minus attenuatis, glandulis stipularibus 2, cymæ dichotomæ ramis demum remotifloris, pedicellis fructiferis brevissimis, sepalis longe linearibus corolla dimidio brevioribus capsulam ovatam acutam longe superantibus.

HAB. ab Istria versus orientem usque ad Euphratem et mare Caspium extensa.—Istria, prope Tergestem; *Benth.* in herb. Hook.—Dalmatia; *Petter,* ibid.—Insula Cherso; *Noe,* ex Koch.—Græcia, prope Athenas, *Swainson* in herb Hook.—Creta; *Sieber,* ibid.—Insulæ Cyprus et Zacyntha; *Sibth.*—Insulæ Archipelagi Græci et Asia minor, *Auch.* no. 821.—prope Odessam; *Auch.* no. 827.—in regione calida Chalcidicis sparse ad viam inter Galatzista et Salonichi, in campis alt. 0–400′; *Griseb.* spicil.—Karakoba, *Pallas* in herb. Hook.—Tauria; *Pall. M. Bieb.* ex Ledeb. Iberia, territor. Elizabethpol et prov. Talisch, alt. 500 hexap. ex Ledeb.—Montes ad mare Caspium; *Aucher,* no. 4273. A.—Mons Taurus; *Kotschy,* secus Euphratem; *Chesney,* no. 186.

L. *nodiflorum, L.* sp. p. 401.—Reichenb. icon. fl. Germ. 5171.

L. *campanaceum, L.* herb.

*****Floribus albis.***

77. L. *album,* Kotschy, MSS.—annuum?, glaberrimum, glaucescens; caulibus ascendentibus, inferne ramuliferis, superne in cymam laxam pauci- et remotifloram abeuntibus, obtuse sulcato-striatis, albidis, nitidis, lævissimis; foliis obovato-oblongis, uni- et obsolete triplinerviis, margine albido vix erosulo scabriusculis; glandulis stipularibus 0; floribus subsessilibus, magnis; sepalis lanceolato-linearibus, anguste albo-marginatis, erosulis.

HAB. in Persia australi; inter segetes in collibus prope urbem *Schiraz*; Kotschy, no. 347 in herb. Hook.—Maio 1842.

Habitus *L. nodiflori,* sed planta magis glaucescenti-albida, (in sicco); glandulæ stipulares 0; corolla alba, magna; infundibuliformi-campanulata. A *L. Persico,* cui valde similis, differt radice annua? cyma ramosa et sepalis angustioribus, anguste nec late marginatis.

78. L. *Persicum,* Boiss.—fruticulosum glaberrimum glaucescens, caulibus virgatis, simplicibus v. supra medium bifurcis,

ramis (v. caulibus) apice unifloris; foliis raris, oblongis, complicatis, recurvis; glandulis stipularibus 0; sepalis ovatis, cuspidatis, late pellucido-marginatis, capsulæ subæqualibus?

Var. β. *Aucheri.*—Foliis linearibus, planiusculis, erectis, sepalis angustioribus.

Hab. in Persia Australi; in convallibus ad radices montis Kuh-Daëna; *Kotschy,* no. 729 in herb. Hook.—Julio, 1842.—Var. β. in Persia Australi; *Aucher,* no. 4276 ibid.

L. *Persicum,* Boiss. in Pl. Kotsch.

Specimina stirpis typicæ quæ video imperfectissima et deflorata Aplophylla quædam referunt; Aucheriana perfectiora sed aliis notis indicatis recedentes. Corolla in illis infundibuliformi-campanulata alba, calyce 3–4 plo longior.

79. L. *leucanthum,* Boiss. et Sprunn.—L. basi fruticulosum, glaberrimum, glaucescens; caulibus ascendentibus, brevibus, angulatis; foliis inferioribus rosulatis, spathulatis, caulinisque linearibus alternis; summis floralibus oppositis et suboppositis; glandulis stipularibus 2; cymis semel v. bis bifurcis, pauci- et demum remotifloris; pedicellis fructiferis brevibus; sepalis linearibus, longe subulato-cuspidatis capsula ovata acuta multo longioribus.

Hab. in Græcia; "in rupibus calcareis aridissimis Hymetti, prope Athenas et in promontorio Sunio," *Boiss.*—Hymettus; *Boiss.* in herb. Hook.

L. leucanthum, Boiss. et Sprunn. diagns pl. or. nov. I. p. 55. Habitus *L. flavi,* a quo florum colore eximie differt.

80. L. *velutinum,* Steud. fruticulosum, pilis simplicibus velutino-cinereum; foliis spathulatis (inferioribus rosulatis), uninerviis; glandulis stipularibus 0; cyma (forsan in specimine depauperato) 2–4-flora contracta; petalorum unguibus in tubum longum connatis; stylis basi ima connatis; sepalis eglandulosis e basi ovata in cuspidem capsulam duplo et ultra superantem contracta.

Hab. in Kurdistania; in fissuris rupium calcareorum montis Gara; *Kotschy,* pl. Mesop. Kurdist. (etc.) no. 356. (sub nomine adoptato.)

Habitus quodammodo *Alyssi orientalis*. Rami vetusti abbreviati, denudati, cortice cinereo, suberoso, puberulo vestiti. Ramuli floridi 3–4-pollicares, parce foliosi, floribus 3–4 intra folia suprema brevissime pedicellatis; capsula parva, ovata, acuta, semiseptis margine glabris.

Color florum ignotus; ideo inter Linos albifloros ob defectum glandularum stipularium collocatum; an recte? Certe ad sect. *Limoniopsidum* pertinent.

Ser. **DASYLINUM, Planch. *vide supra*, vol. VI. p. 598.

81. L. *Olympicum*, Boiss. "perenne, suffruticulosum, humile; caudiculis ramosis, basi nudis; foliis parvis, elliptico-lanceolatis, acutis, obsolete uninerviis, parce et adpresse hirsutis; caulibus foliosis brevibus, simplicibus, breviter hirtellis; calycibus adpresse hirsutis, laciniis lanceolatis acuminatis glanduloso-ciliatis; corolla violacescente calyce triplo longiore." *Boiss.*

HAB. "in excelsis Olympi Bithynici." *Boiss.*—*Aucher*, no. 838 in herb. Hook.

L. *Olympicum*, Boiss. diagn. pl. or. nov. I. p. 56.

82. L. *hirsutum*, L. perenne, caulibus pube brevi crispula v. patente indutis; foliis caulinis oblongis v. oblongo-linearibus, 3–5-nerviis, superioribus margine glanduliferis v. nudis; cymæ (floriferæ conferte corymbosæ) ramis fructiferis elongatis; sepalis ovato-lanceolatis longe cuspidatis, adpresse villosis capsula ovata acuminata longioribus. Corolla campanulata, cærulescens.

Var. *α*. foliis utrinque plus minus villosis.

L. hirsutum, L. sp. 378.—Mutel, fl. Franc. p. 182. (excl. syn. fl. Græca.)—Reichenb. icon. fl. Germ. tab. 5166.

— *β*. foliis utrinque glabriusculis, angustioribus, 3-nerviis.

— *γ*. foliis fere omnibus calycibusque margine glanduliferis.

L. Anatolicum, Boiss. diagn. pl. nov. or. fasc. 1. p. 56. monente cl. Grisebachio.

HAB. a Nicæa et agro Badensi per Europam australi-orientalem in Asiam minorem, Syriam et provincias Caucasicas.—Gallia; Galloprovincia? *Mutel*, fl.—Ditio Rhenana, prope Baden, *Vauter* ex Mutel.—Styria, Moravia, Austria inferior; *Koch*, syn.—

Thracia prope Philippopolin et in Hæmo, Frivaldsky; ex Griseb.—Rossia australis; Podolia australis; *Besser* in herb. Hook.—prope Odessam; *Aucher,* no. 832, ibid.—Ucrania, gubern. Cherson, Yekatarinoslav, Provinciæ Caucasicæ, *Ledeb.* fl.—Armenia Rossica. *Koch,* ex Ledeb.—Pisidia, ad lacum Egirdib; *Heldreich* in herb. Hook.

Var. β. in pratis Hungariæ; Dr. Pfendler in herb. Hook. et verosimiliter alibi, cum forma vulgari.

Var. γ in Phrygiæ, Cariæ et Lydiæ collibus argillosis, Boiss.—Bithynia prope Brousse; *Auch.* no. 830, bis.—Syria; *Auch.* no. 830.—Lycania; in arenosis volcanicis montis Karadagh, ad Larenda; *Heldreich,* in herb. Hook.

83. L. *viscosum,* L. perenne, pilis crispulis v. patentibus pubescens; foliis oblongis v. oblongo-lanceolatis, 3–5-nerviis, utrinque glabriusculis v. pilis paucis longis sparsis, superioribus floralibus sepalisque glanduloso-ciliatis, cymæ ramis fructiferis demum elongatis; pedicellis fructiferis inferioribus haud crassis capsula longioribus; sepalis lanceolatis, breve cuspidatis, parcissime pilosulis, capsulam ovatam acuminatam paulo superantibus; corolla campanulata rosea subtriplo brevioribus.

Hab. in Gallia? Italia superiore et Germania inferiore.—Gallia; Pyrenæi, Sedella de la Manera et Sin; *Lapeyr.* ex *Mutel*; Galloprovincia? *Mut.*—Italia; Ager Nicæensis, *Duby, Mutel*; Friuli; *Benth* in herb. Hook.—Carinthia, Tyrolia australis; *Koch,* syn.—Bavaria superior, prope Monachum; *Schultz* ex *Mutel*; *J. Gay* in herb. Hook.

L. viscosum, L. sp. p. 398.—Mutel, fl. Franc. 1. p. 183.—Reichenb. icon. fl. Germ. F. 1567.

84. L. *pubescens,* Russell. L. annuum; caulibus teretibus, lævibus, superne corymboso-divisis, inter folia densa patenti-pilosulis; foliis alternis, intermediis ovato-oblongis, basi obtusis, apice acutiusculis, 5-nerviis, præter villos raros submarginales v. in disco sparsos glabrescentibus supremis glanduloso-ciliatis; cymæ compositæ ramis apice confertifloris; sepalis e basi lanceolato-lineari, in acumen lineare longum, basi subcontinuum et multo longiorem herbaceum productis, piloso-ciliatis,

subeglandulosis; antheris ovato-oblongis basi profunde emarginatis; stylis ad medium connatis; ovario stipitato glabro.

L. pubescens, Russ. Alep.

Var. β. *Sibthorpianum*: humilius, foliis caulinis oblongis, 3-nerviis, corymbi floriferi ramis laxioribus, minus ramosis. Hæc variat caule gracili, simplicissimo, 3–4-pollicari, vel caulibus pluribus e radice gracili ascendentibus, intermedio 7-pollicari; pilis albis v. ramis passim nigrescentibus.

L. *piliferum,* Presl. fl. Sic. p. 171.

L. *Sibthorpianum,* Reuter, ex Boiss.—Reut. in Mem. de Gén. 8. p. 283. tab. 3. ex Walp.

L. decoloratum, Griseb. spicil. fl. Rum. I. p. 117.

L. hirsutum, Fl. Græca, tab. 302. non L. monent. Reut. et Grisebach.

Hab. Forma typica in Syria prope Aleppum, *Dr. Russell* in herb. Banks. (ubi vidi spec. authent.) et in Libano, herb. Hook.

Var. β. in Sicilia prope Kephaloidim in pascuis apricis regionis collinæ; *Presl,* flor. Sic.—in Creta; *Sieb.* (sub nomine *L. hirsuti,*) monente Presl.—in Macedonia et Bithynia; sparse in umbrosis regionis *Quercus Cerris* prope Vodenam alt. 1500′–1700′; in herbidis Olympi Bithynici; *Griseb.* Spicil.—in agro Eliensi et insulæ Cypri campestribus; *Sibth. et Sm.*—in fruticetis montis Torniki Argolidis; *Heldreich* in herb. Hook.

Descriptio speciminis Libanotici:—Herba pedalis. Caules e collo radicis simplicis 4, e quibus 2 fertiles, inæquales, alteri steriles stoloniformes, foliis angustioribus tecti. Folia infima, cito collabentia, anguste obovata, obtusa, basi attenuata, spira pauciseriali disposita, intermedia (caulium fertilium) ovato-oblonga, v. subovata, erecto-imbricata, cauli semiadpressa, circiter pollicaria, dimidio lata, basi sæpius oblique subamplicata et ibidem obtusissima v. subcordata, omnia viridia, herbacea, sublævia, pilis albis raris præsertim versus marginem sparsa. Cyma (caulis centralis) quinquies-sexties dichotome divisa, ramis inferioribus (infimo excepto) flore alari subsessili et versus furcationem foliis 2 ovatis, v. oblongis, oppositis v. suboppositis instructis; supremis conferte cymoso-floriferis. Flores subsessiles.

Sepala linearia (in cuspidem basi continuum includens), 4–5 lin. longa, basi vix lin. lata et ibi elevato-trinervia, nervis albidis, cuspide basi triplo et ultra longiore, acutissimo, viridi, glandulis stipitatis ciliatis, pilisque paucis sparso. Petala calyce plus duplo longiora.

Species dubiæ sedis.

85. L. *carneum,* A. S. H. "glabrum, caule basi suffruticoso, foliis oppositis, superioribus paucis alternis, erectis subimbricatis, lanceolato-linearibus acutissimis, basi obtusis glaucescentibus; panicula subcoarctata, petalis calyce 3–5-plo longioribus."

Hab. in campis herbosis prope prædium vulgo Estancia de Suarez, haud longe a vico S. Josephi, prov. Cisplatina. *A. S. H.*

L. carneum, A. S. Hil. fl. Bras. mer. I. p. 133. Folia basi eglandulosa. Calycis foliola subglanduloso-serrata. Flores carnei, vix *L. tenuifolii* et *L. perennis* similes. A. S. H.

Species non satis notæ.

86. L. *trinervium,* Roth, "calycibus obtusis, tricostatis, capsulis globosis, mucronatis; foliis alternis linearibus, 3-nerviis."

Hab. in India orientali. *Heyne* ex Roth. "Caulis teres, filiformis, lineatus, glaber. Folia alterna tamen densa, erecta et quasi imbricata sessilia lineari-acuminata, integerrima glabra trinervia, semiunciam longa, vix ultra semilineam lata, floralia angustissima. Pedunculi terminales alterni, solitarii, subangulosi, glabri, subfoliosi. Flores ignoti. Capsula globosa, glabra, mucronata, magnitudine *Pisi majoris.*"

L. *trinervium,* Roth, nov. pl. sp. p. 187.

87. L. *Pallasianum,* R. et Sch.—"L. Calycibus glabriusculis, acutis margine lacero albo, foliis linearibus acutis, cano-pubescentibus."

Hab. in Chersoneso Heracleotico; *Pallas* in herb. Willd.

L. Pallasianum, R. et Sch. syst. p. 758.

L. pubescens, Willd. herb. non Russ. "Radix lignosa, multiceps. Folia radicalia cæspitosa, obtusiuscula vix pollicaria. Caulis foliis triplo longior, pubescens. Folia caulina radicalibus similia, sed summa glabriuscula. Corollæ calyce triplo majores." *De Schlecht.* in litt. ad Rœm.

Species plane dubiæ et oblivione dignæ.

L. *verticillatum,* L. "foliis verticillatis" L. *Boccon.* Mus. Fl. p. 49. tab. 42.—Barrel. icon. tab. 1226.

L. *striatum,* Walt. Car. p. 118.—fere absque dubio ex ordine excludendum, an Hypericinea? v. Gentianea? vix inquirendi dignum.

Gen. III. REINWARDTIA. Dumort enum. 19. ex Endl. non Spreng. nec Blume.

Macrolinum, Reichenb. Handl. p. 306. (ann. 1837) ex ipso in iconograph. fl. Germ. vol. V. p. 67.

Lini species. Roxb.—Endl.—Benth. et plurim. auct.

Obs. Character generis essentiale e stipellarum præsertim et imprimis ex appendiculis externis (!) petalorum extruendum. Hos appendiculos supra perperam internos dixi, quia flores nullos perfectos examini subjicere licuerat, et in icone Roxburgiana inedita dorsum petali nulla nota ab ejus facie distingui potueram. Hodie tamen floribus *Reindwardtiæ trigynæ* examinatis, appendiculos lineares in tergo petalorum sitos, ut sane beatus Roxburgius descripsit, vidi.

1. R. *trigyna.*—"Foliis ovato-oblongis, integris, majoribus apicem versus minutissime serrulatis, glabris; floribus solitariis (v. paucis umbellato-congestis?); stylis 3 a basi liberis."

HAB. in India Or. trop. Roxb. (qui plantam vidit tantum in hort.)

L. *trigynum, Roxb.* fl. Ind. 11. p. 110. et icon ined. (in Musæo Cœt. Hon. Mercat. Angl. Ind. or.) cujus facsimile a cl. Hook. delineatum video. Sims, Bot. Mag. t. 1100 (forma floribus interdum 3–4-fasciculato-congestis.) "Frutex circiter 2–3-pedalis, suberectus. Stipulæ minutæ. Folia aristato-mucronata. Ungues petalorum in tubum conniventes, versus apicem intus denticulis 2 erectis aucti. Filamenta e basi lata subulata, sterilia, setiformia. Antheræ sagittatæ. Styli staminibus multo longiores. Stigmata capitata. Capsula globosa, Piso majori æqualis, 6-locularis, (revera 3-locularis, loculis incomplete bilocellatis) 6-valvis. Semina reniformia." *Roxb.* fl. Ind. 2. p. 110. et 111. ex Angl. versus.

2. R. *repens.*—" R. foliis cuneato-ovatis mucronulatis glabris crenulatis; floribus solitariis pedunculosis, foliolis calycinis lanceolatis mucronulatis, margine denticulatis, caule fruticoso repente." *Don.*—" Stylis 3 circiter ad medium connatis." Benth.

L. repens et *L. semitrigynum,* Hamilt. MS. ex Don.

Var. *β, Cicanobum,*—" foliis elliptico-oblongis acuminatis serratis, umbellis terminalibus simplicibus multifloris, foliolis calycinis oblongis acutis, caule fruticoso." *Don.*

L. Cicanoba, Hamilt. MS. ex Don.

L. trigynum, Smith, exot. bot. p. 31. tab. 17. suadente cl. Benth. (Forma ut videtur inter stirpem typicam et var. *β* media.)

Hab. Forma typica in Napalia ad Narainhetty, Hamilt. ex Don. —var. *β*, ibid. *Hamilt.*—Napalia, *Dr. Wallich* (anno 1821) in herb. Hook.—in montibus ditionis Sirenagur, *Col. Hardwick* ex Smith. (Vidi specimina authentica in herb. Hook. et Smith.)

Obs. Varietas *β* huc, auctoritate cl. Benthami, referta. (Conf. Bot. Reg. sub folio 1326 pagina aversa.) Specimina plurima quæ vidi in Musæo Soc. Linn. Londin. omnia imperfectissima et cum fragmentis speciei subsequentis commixta.

3. R. *tetragyna.*—" R. glabra fruticosa ramosa, foliis elliptico-oblongis acuminatis serratis, basi attenuatis, petiolatis; floribus capitato-corymbosis; pedunculis bracteatis; sepalis ovatis breviter acuminatis, margine subciliatis, petalis calyce duplo longioribus; stylis 4 liberis; stigmatibus globosis; capsulis obtusis." *Benth.*

Hab. in Napalia et ditione Silhet, *Wallich* ex Benth.

Linum tetragynum, Coleb. MS. ex Wall. cat. herb. Ind. no. 1506. Benth. in Bot. Reg. sub folio 1326.

Flores flavi, illis *Reinw. trigynæ* paulo minores.

Sect. II. HUGONIEÆ, *Planch.*

(*Vide supra*, vol. VI. p. 593.)

Gen. I. Hugonia, L. gen. no. 831.—Endl. gen. no. 5404.

Obs. Cirrhos singulares hujus generis interdum bracteolis minutis donatos video, unde patet eos esse pedunculos inflorescentiarum semper abortivarum.

1. H. *Mystax*, L.—H. ramulis cirrhis pedicellis calycibusque dense lutescenti-pubescentibus v. subtomentosis; foliis lanceolatis v. lanceolato-obovatis, basi acutis, apice breve acuminatis glabriusculis, reticulato-venosis; stipulis subulatis indivisis, floribus ad apicem ramulorum paucis breve pedicellatis.

Hab. in insula Ceylona et in peninsula Ind. or.—Ceylona, *Domina Walker*, no. 1012 in herb. Hook.—Peninsula Ind. or. (ora utraque), *Wight*, no. 394, ibid.

Hugonia Mystax, L. sp. 954.—Wight, Ill. of Ind. Bot. t. 32.

Hugonia obovata, Hamilt. in Trans. Linn. Soc. 14. p. 205 ex W. et Arn.

2. H. *serrata*, Lamk.—H. ramulis inflorescentiis bracteis calycibusque ferrugineo-sericeis; foliis oblongis breve acuminatis v. obtusatis, glanduloso- et obtuse serratis glabriusculis; stipulis subulatis indivisis; cymis paucifloris bracteolatis axillaribus et terminalibus.

Hab. in insula Mauritii, *Commerson* ex Lamk.—*Sieber*, no. 83; *Bojer*, *Gardner* in herb. Hook.—necnon in insula Borboniæ; *Aublet* in herb. Banks., nunc Mus. Brit. sub nomine *plante sudorifique de la Chine*.

Hugonia serrata, Lamk. dict. III. p. 149.

Hugonia Mystax, Cav. diss. III. p. 177. tab. f. 1., non L. ex Lamk.

Cirrhi validi, semper oppositi.

Hugonia *tomentosa,* Cav.—H. ramis foliisque utrinque albido-tomentosis, his oblongis, apice subrotundatis obsolete dentatis; stipulis ovatis, 2–3-fidis; cymis in axillis foliorum superiorum pedunculatis.

HAB. in insula Mauritii, *Commers.* ex herb. Lamk.

Hugonia tomentosa, Cavan, l. c. f. 2.—Lamk. l. c. p. 150. Diagnosis ex descriptione Lamarckiana.

4. H. *Afzelii,* Rob. Br. MS.—H. ramis foliisque subtus tomento denso cano-flavescente indutis; his magnis, oblongis, acutis, repando, et remote crenatis, v. sudenticulatis; stipulis pinnatipartitis, laciniis subulatis; cymis 3–4-floris, axillaribus, folio brevioribus; floribus brevissime pedicellatis; calycibus dense sericeis, corolla subduplo brevioribus; staminibus exsertis.

HAB. in Sierra Leone, Afric. occid. trop.; *Afzel.* in herb. Banks, nunc Mus. Brit.

Folia majora 6–7 poll. longa, 2–½ poll. lata, omnia breve et crasse petiolata, rigide chartacea, crenis obsoletis nunc obtusissimis, nunc mucronulatis, adulto præter nervum medium, supra glabrata, novella supra tomento detersibili albido tecta. Stamina 5, majora stylos longe superantia.

5. H. *ferruginea,* W. et Arn.—H. "foliis oblongo-lanceolatis, acuminatis, integerrimis, demum supra glabratis, subtus tomento flavescenti-ferrugineo nitentibus; spiris (cirrhis) oppositis." W. et Arn.

β? *Gardneri*; foliis minutissime v. obsolete denticulatis.

HAB. in Peninsula Ind. or. *Wight.*; β, in insula Ceylona, no. 90 in herb. Hook.

Hugonia ferruginea, W. et Arn. prod. pen. Ind. or. I. p. 72.

Ex diagnosi nimis brevi non patet an var. β. non sit species distincta; quare descriptionem ejus subjicio:—

Rami inferne teretes, v. subcompressi, hinc inde ramulosi v. indivisi, secus longitudinem totam foliosi novelli ferrugineo-subsericeo-tomentosi, adulti inferne subglabrati. Folia sæpius internodiis cirrhi oppositi multoties longiora, oblongo-lanceolata, breve petiolata, basi acutiuscula, apice breve et acute cuspidatia sæpius margine denticulis minutis hinc inde aucta, nunc subintegerrima, novella supra tenuiter sericea, nervo medio tantum discolori, nempe ferrugineo-splendente, subtus tomento sericeo persistente adpresso ferrugineo splendentia, adulta demum supra glabrata 2–3 poll. longa, 12–15 lin. lata, nervis utrinque 7–12, in pagina utrinque prominulis. Stipulæ petiolis subduplo longiores, subulatæ, in lacinias paucas fissæ, sicut pedicelli et calyçes ferrugineo-sericeæ. Pedunculi in specimine axillares, solitarii, 1–3-flori, fructiferi 2–4 lin. longi, bracteolis 1–3 stipulis conformibus caducis ornati; pedicellis brevissimis sub flore articulatis. Petala oblongo-obovata, lacinias calycis ovatas . . . . superantia, apice erosa. Drupa globosa, obtusissima, glabra, Piso paulo major, calyce longior, 5-locularis. Semivalva (endocarpii) pyrenæ cujusvis a semivalva adjacente (ejusdem carpelli) facillime secedens, crustacea, extus rugosa, intus lævis, sub apice, ubi funiculus columellæ affixitur, leviter emarginata, (prorsus ut in *Lino*.).

6. H. *Planchonii,* Hook. fil. MSS.—Ramis petiolisque ferrugineo-pubescentibus; foliis lanceolato-oblongis, cuspidatis, utrinque acutis, remotiuscule serrulatis, glabris, nitidis, rigide chartaceis, pulchre reticulato-venosis; stipulis bracteisque pinnatipartitis laciniis subulatis; cymis axillaribus, brevibus, 1–5-floris; stylis staminibus longioribus.

HAB. in Africa occid. trop.—Sierra Leona; *Afzelius* in herb. Mus. Brit.; *Vogel* in herb. Hook.—Acra; *Vogel* ibid.

Species distinctissima et pulcherrima, facie Smeathmannias referens. Folia 3–5 poll. longa, 10–20 lin. lata. Cirrhi sæpius alterni v. subnulli.

Gen. II. ROUCHERIA, *Planch.*

(*Vide supra,* vol. VI. p. 141. and 594.)

1. R. *calophylla,* Planch, (supra, vol. VI. p. 142.)

HAB. in Guyana Gallica, *Schomburgk,* no. 988. in hb. Hook.

2. R. *Schomburgkii.*—Ramulis rufo-velutinis; foliis lanceolatis cuspidatis acutis supra nitidis glaberrimis, subtus præsertim secus costam mediam pubescentibus; spicis compositis ab-

breviatis densifloris sessilibus petiolos breves 2–4-plo superantibus.

Hab. in Guayana Anglica, *R. H. Schomburgk*, no. 801, 1362, in herb. Benth.

Facies omnino *Roucheriæ calophyllæ* a qua differt indumento ramulorum, foliis minoribus (1½–2½ poll. longis, 3–10 lin. latis) et inflorescentiis petiolos superantibus. Flores in specimine desiderantur, sed in illis cl. Bentham observavit, petala 5, æstivatione convoluta oblonga maculata obliqua; stamina circiter 15, inæqualia basi in tubum brevem circa ovarium connata; ovarium 3-loculare loculis 2-ovulatis? ovulis pendulis, stylos 3 distinctos.

3. R. *Griffithiana*, Planch. l. c. p. 143.

Hab. in ditione Malaccensi, (dele igitur locum natalem *Khasya*, olim perperam plantæ adscriptum.)—Malacca, *Griffiths*; Singapore, *Lobb* in hb. Hook.

4. R.? *humiriifolia*, Planch. l. c. p. 143.

Hab. In Cayenna, *Martin* in herb. Hook.

Gen. Durandea, *Planch.*

(*Supra*, vol. VI. p. 594.)

Calyx 5-partitus, laciniis late ovatis obtusis, æstivatione quincunciali imbricatis. Petala 5 calyce parum longiora, æstivatione convoluta. Stamina 10, filamentis basi in annulum confluentibus alternatim brevioribus; antheris parvis bilocularibus. Discus —? Ovarium ovatum 5-loculare, loculis 1-ovulatis, ovulis anatropis ex apice anguli interni suspensis. Styli 5 fere a basi distincti subulati. Fructus ——

Frutex Austro-Caledonicus glaberrimus, siccitate nigrescens, facies *Ixionanthis*. Folia alterna in petiolum attenuata oblonga basi acuta apice complicata subincurva abrupte breveque acuminata, adpresse obtuseque serrata rigida fragilia nec crassa penninervia reticulato-venosa; stipulæ minutæ dentiformes adpressæ, lapsu præcoci cicatricem glanduliformem nudantes. Racemi ad apices ramulorum 3 v. 4 approximati, vix ultra sesquipollicares simplices v. subdivisi; bracteæ lineares subulatæ pedicellis vix ½ lin. longis dimidio breviores; flores inaperti eos *Ardisiarum* quarundam simulantibus.—Dicatum memoriæ beat. *Abbatis Durand,* Monspessulano, qui Floram Hispaniæ australis et Mauritaniæ summa solertia exploravit.

Durandea *serrata,* Planch.

Hab. in Austro-Caledonia, *Labill.* in herb. Hook. a cl. Webb comm.

Folia circ. 2–2½ poll. longa, 14–18 lin. lata, basi acuta; petiolus gracilis, 3–4 lin. longus, supra leviter canaliculatus; racemi foliis breviores, rachi compresso-angulata, hinc inde ramulos 2–3 breves exserens, vel simplex; calycis laciniæ obtusissimæ valde imbricatæ, nigrescentes, marginibus pallidioribus subscariosæ; petala in flore non plane evoluto, calyce non duplo-longiora crassiuscula, siccitate nigro-rubentia.

Sect. III. ANISADENIEÆ, *Planch.*

(*Vide supra,* vol. VI. p. 594.)

Gen. unicum: Anisadenia, Wall. cat. no. 1510.

Meisn. Gen. comment. p. 96.—Fenzl. Darst. und Erlaxt. vier . . . . . . Pflanz. Gatt. (etc.) p. 21.

A. *saxatalis,* Wall.

Hab. in Napalia ad rupes montis Sheopore anno 1821. *Wall* in herb. Hook. (cum charactere generico.)

Anisadenia saxatilis, Wall.—Fenzl. l. c. p. 22. tab. III. (icon opt.)

Descriptions of some plants new to the British Flora; by William Mitten, A. L. S.

The plants now described, have not, so far as I am aware, been noticed by any writers on British Botany, and I have here given a somewhat more lengthened description of them than they perhaps require, chiefly, that they may be investigated when growing in different situations; for I have little doubt that some of them will be found not very rare. It is only by careful observation of plants when under the influence of different circumstances that a correct judgment can be pronounced on their specific value; and I am

not satisfied that the characters here given, may be found to hold good in all cases.

I cannot but expect that by some plant-gatherers, these plants will be considered mere "*splits*;" but, commending them to the examination of field-botanists, I will be content to say with Nees ab Esenbeck: "malo enim peccare in discriminandis quam in confundendis rerum naturæ cognitionibus."

To Mr. Borrer I owe the ability to determine with exactness most of the plants here described; for without the very valuable assistance of his Herbarium and Library, I could not have been positive that my plants were precisely those of foreign authors.

1. Potentilla *mixta* [Nolte apud Reichenbach fl. Germ. exsicc. no. 1743]; caulibus flagelliformibus prostratis superne ramosis, foliis quinatis intermixtis ternatis, foliolis oblongo-obovatis ab apice ultra medium serratis, subtus adpresso-pilosis, serraturis ovatis, obtusiusculis, floribus solitariis plerisque tetrameris, carpellis .... *Koch, Synops. Fl. Germ. Ed.* 2. *v.* 1. *p.* 239. *Reichenbach, fl. Germ. no.* 1743 (*specimen Noltianum.*)

Hab. On waste ground near Valebridge, in Keymer, Sussex, in small quantity.

Root woody, producing several stems which take their rise below the tuft of leaves. Stems procumbent at the base, ascending, branched, seldom emitting rootlets from the nodes. Leaves mostly ternate, a few of the lower ones quinate, nearly glabrous above, beneath clothed on the veins with long appressed hairs; leaflets oblong-obovate, serrate, teeth ovate, about two or three on each side, terminal tooth longer than the lateral (in the stem leaves). Stipules lanceolate, entire, or with one or two teeth at the sides. Pedicels about three times longer than the leaves. Calyx with four, or less frequently, five divisions. Petals four or five, as long again as the calyx, bright yellow. Carpels rugose.

This plant is undeniably very close to *Potentilla reptans*, Linn. of which it may be but a variety. It is however readily distinguished at first sight by its habit, which is that of *P. Tormentilla*, Sibth.; indeed it has so much the look of that species, that it might be passed over as state of it, or of *P. procumbens*, Sibth.

It appears to differ from *P. reptans*, in its more erect, seldom rooting stems, the different form of its leaflets, and its usually four-petaled flowers; from *P. Tormentilla* and *P. procumbens*, it may be readily known by its more obtusely toothed leaves, which are also of a different outline. My specimens agree well with that gathered by Prof. Nolte in Reichenbach's Flora exsiccata. Further and more extensive examination must however shew if it shall be considered a species or a variety.

2. Filago *Jussiaei*, Cosson et Germain. Tige de 1–3 décimêtr. rameuse presque dès la base, plus rarement, simple inférieurement, plus ou moins irregulièrement di-trichotome, à rameaux ord. étalés on divariqués. Feuilles couvertes d' un tomentum soyeux, blanchâtres, très rarement d' un blanc jaunâtre, légêrement espacées, plus ou moins étalées, oblongues-obovates ou subspatulées, presque planes ou à bords un peu roulés en dessous. Glomérules subhémisphériques, composés de 8–15 plus rarement 20 capitules, munis à la base d' un involucre de 3–4 feuilles qui depassent les capitules. Capitules ovoides-coniques, non plongés dans un tomentum épais, distincts presque jusqu' à la base. Involucre à 5 angles aigus tres saillants séparés par des sinus profonds; à folioles pliées longitudinalement, profondément concaves surtout supérieurement, longuement cuspidées à pointe subulée scarieuse glabre jaunâtre, les interieurs ord. obtuses ou à peine mucronées. *Cosson et Germain, Flore des Environs de Paris, p.* 406. *Illust. flor. Paris. t.* 26. A.

Hab. On cultivated land at Hurstpierpoint, Sussex.

I have nothing to add to the above excellent description, except the note at the foot of the page of the accurate work above quoted, which is as follows: "L' involucre général des capitules du *F. Jussiaei* est formé par les feuilles des rameaux raccourcis qui constituent le glomérule lui-même. Ces feuilles se développent normalement dans cette espèce, et dépassent le glomérule. Dans le *F. Germanica*, au contraire, toutes restent rudimentaires, ou une seule se développe. Il ne faut pas confondre les feuilles de cet involucre avec celles qui se trouvent à la base des rameaux, et qui peuvent également dépasser le glomérule." My specimen accords with the figure in the Atlas, in every respect, excepting that there is tomentum about the bases of the capitula, which is not the case in the French plant. This species appears to differ from *F. apiculata*, G. E. Smith, of which I have only seen cultivated specimens, in the presence of the long spathulate involucral leaves, a character by which it may at once be known both from *F. apiculata* and *F. Germanica*. *F. Jussiæi* and *F. apiculata*, differ essentially from *F. Germanica* in the form and arrangement of the scales of the capitula, which are so placed as to form five sharp angles with intermediate furrows, whilst in *F. Germanica* the scales are arranged equally all round.

It is possible that this plant, of which I have preserved but a single specimen, may have been introduced with foreign seed: it is, however, equally probable, that it only requires looking for, to be found in many other places.

3. Mercurialis *ovata*, Stud. et Hoppe; caule simplicissimo foliis subsessilibus vel breviter petiolatis ovatis, floribus fœmineis longe pedunculatis. *Koch. Synops. Fl. Germ. Ed.* 2. *v.* 2. *p.* 732. *Reichenbach, Fl. Excursoria, n.* 4803. *Fl. exsicc, n.* 1783.

Hab. Hedge-rows near Hurstpierpoint, Sussex. I have introduced this plant chiefly on account of its exact correspondence with the specimens given in Reichenbach's Fl. exsicc. It is probably but a state of *M. perennis*, although its subrotundo-ovate leaves give it a different appearance, which does not depend on the sex of the plants.

4. Carex *paludosa*, Goodenough.

Var. β, *Kochiana*. Carex Kochiana, *De Cand.* Fruit oblong or oblong-ovate; glumes ending in a long cuspidate point.

Hab. Ditches in the level, near Littlehampton, Sussex.

5. Lolium *linicola* (Sonder in litt.); "valva spiculam dimidiam superante vel vix æquante, spiculis oblongis ovatisve, floribus breviter aristatis muticisve fructiferis ellipticis, radice fasciculis foliorum sterilibus destituta." *Koch, Synops. Fl. Germ. Ed.* 2. *v.* 2. *p.* 957.

"L. arvense, *Schrad. Germ. p.* 399. *D. fl.* 1. 715, *et plurimo-*

rum auctorum." *Reichenb. Ic.* 1. *f.* 1. 1337.—39. *Fl. Germ. excurs.* 65. *Fl. exsicc.* no. 102.

L. remotum, *Hoffm. D. fl. Ed.* 2. 1. *p.* 63 (*Koch*).

Hab. With *L. temulentum,* amongst various crops, on cultivated land about Hurstpierpoint, Sussex.

Root annual, without sterile shoots. Stems solitary, or more or less branched below, erect, leaves glabrous. Spikelets pale-green, remote, about 7–11 flowered, overtopping the valve by about one third, or only equalling it; lower palea ovate-oblong; awn very weak, one third the length of the palea, or none.

Lolium linicola may be distinguished from *L. perenne, L.* and *L. Italicum,* Alex. Braun, (L. multiflorum, *Lam.* but not of Gaudin), by its want of sterile shoots about the root: from *L. temulentum* and its forms, it may be readily known by its smaller size and more numerous flowers. *L. arvense* of British authors is, so far as I can learn, a state of *L. temulentum*; I cannot call it a variety, having raised, from the seed of the short-awned plant, the long-awned state of *L. temulentum*: the roughness of the stem appears also to be equally variable in cultivation.

L. linicola has maintained its characters under cultivation for several years.

It may be objected to *L. linicola,* that it has been introduced with foreign seed, which may be true; the same objection must, however, apply with equal force to *L. temulentum,* and it is doubtful to what Flora they may be referred with the greatest propriety; but it does not seem reasonable to exclude such species as these altogether from the British Flora.

L. linicola may be expected to be found a weed in those districts where Flax is cultivated.

6. Triticum *biflorum,* Brignoli; spica disticha, spiculis 2- rarius 3-floris, valvis lanceolatis trinerviis, acuminatis, floribus aristatis, arista flore subtriplo breviore, axe scabriusculo, foliis glabris margine scabriusculis, radice fibrosa.

"Triticum biflorum, *Brignoli, fasc. plant. rar. Forojul. an.* 1810." *Koch, Synops. Flor. Germ. Ed.* 2. *v.* 2. *p.* 953. *Reichen-*

bach, Fl. Germ. exsicc. no. 2104. (Agropyrum) *Kunth, Enum.* 1. *Pt.* 1. *p.* 448. Triticum alpinum, *nov. sp. Don in Herb. Borrer.*

Hab. Rocks on Ben Lawers, rare. *Mr. G. Don.*

Root fibrous, stems about two feet high. Leaves glabrous and quite smooth beneath, the upper side with a few long scattered hairs in all the specimens I have seen, rough only very slightly at the margins. Spike about three inches long. Valves lanceolate, acuminate, about three-nerved; flowers two to four, acuminate, shortly awned; awn about one third the length of the palea, or often scarcely perceptible.

The present is one of those plants gathered by the late Mr. G. Don, which appear to have been overlooked by other botanists. His label in Mr. Borrer's Herbarium, runs thus: "Triticum alpinum, nova spec.—it differs from the *caninum* by its short arista and upright spikes, and from the *repens* by not running at the roots." No date is mentioned. It is thus clearly evident that he distinguished it as a new species; the only British *Triticum* with which it can be confounded is *T. caninum,* from which it may be distinguished by its leaves smooth on both sides, its usually two-flowered spikelets, and its want of the long awn; it also appears to be a more slender plant with narrower leaves.

The British species of *Triticum* are undoubtedly difficult plants. *T. biflorum* I found in Mr. Borrrer's Herbarium, when examining his specimens with a view to prove *T. acutum* a Sussex plant. In this, I believe, I have succeeded; but as I did not observe it in a living state, until too late to obtain entire specimens, I shall reserve any remarks upon it for future occasion.

On a new kind of PHORMIUM, *or New Zealand Flax*; by M. AUGUSTE LE JOLIS.

A very curious kind of *Phormium,* hitherto unknown in the gardens of Europe, blossomed last summer at Cherbourg for the first time. This red- and green-flowered plant, brought directly from New Zealand, where it was gathered in August, 1839, in

Chaldy (Cloudy?) Bay (46° 30′* latit. 166° 23′ long.), is very distinct from the long known yellow-flowered kind; but no description of it has yet been published, and it has been completely neglected by most botanists, who speak only of a single species of *Phormium.* However, Capt. Js. Cook perfectly distinguished at first two kinds of New Zealand flax, and made mention of both in the following terms: "There is a plant that serves the inhabitants instead of hemp and flax, which excels all that are put to the same purpose in other countries. *Of this plant there are two sorts*; the leaves of both resemble those of the Flags (*Iris*); in one kind, the flowers are *yellow*: in the other, they are *deep red*;" In the French edition of the 2nd. Voyage, vol. 1. pl. 8, New Zealand flax is figured, but the plate is so imperfect that it is very difficult to state which of the two was represented; however, the *inflorescence* is very similar to that of our kind of Cherbourg.

Anderson and Forster mention but a single yellow-flowered species, which the latter calls *Phormium tenax,* and of which he gave a description, transcribed by Mr. A. Richard, in his *Flore de la Nouvelle Zélande* (Voyage de l'Astrolabe, Botanique, page 153.); but that description seems to have been made from several kinds, since the characters described by Forster agree completely with neither of the two I know. Indeed the characters concerning the inflorescence, (the colour of the stem and peduncles being excepted,) agree with our red- and green-flowered kind; but the flowers of the *Ph. tenax* are said by Forster to be yellow, and consequently identical with those of the kind hitherto cultivated in Europe; then, the form of the ovary and the colour of the style, belong again to our plant of Cherbourg. Forster appears to have intentionally confounded several species in a single one, for he knew a red-flowered plant, since it is found in his original drawings. After Forster, most of the botanists considered but the yellow plant, and a few only made a vague mention of the red one, as a mere variety of *Ph. tenax.* At last, Dr. J. Dalton Hooker distinguished again two species, and called one *Ph. Colensoi.* On that subject, I beg leave to transcribe here, a most interesting letter, received from the celebrated Director of the Royal Gardens of Kew :—"Besides the common and well known large yellow-flowered *Phormium*," says Sir William Hooker, "we have received, from Mr. Colenso, a small red-flowered kind (in all probability the one to which you allude), and as Mr. Colenso was the first to direct my son, Dr. Hooker's, attention to this, he gave it the MS. name of *Ph. Colensoi*. He however further ascertained that kind, figured by Forster, in his original drawings in the British Museum, to be the small red-flowered one. It may then become a question which of the two ought to bear the name of *tenax* (a name, which in my opinion, ought on no account to be abolished). It would appear that Forster considered there was but one species, and that in reality he gave the name (*tenax*) to that which is in common use, and which, I suppose, is the yellow-flowered one. If so, especially seeing that the yellow sort has invariably been called *Ph. tenax*, I think the name should be retained to that. From further researches, I find, however, that Mr. Colenso is not the first to distinguish the two. Capt. Cook, in his Voyage, expressly says there are two species, one with a yellow and the other with a red flower: and it would seem to me more just, that the name of that distinguished navigator should be given to the second species, since no description has been published of it hitherto; but that matter I entirely leave to your judgment, as well as the credit of publishing truly distinguishing characters, which can only be done from the living plants: for even the yellow-flowered one blossoms rarely with us. I do not think the red-flowered *Phormium* is in cultivation in England; I never heard of it. I possess in my herbarium the fruit of a *Phormium*, which is very different from that of *Ph. tenax*, (*auct.*) and which, if it does not belong to the red-flowered kind (and I do not think it does), must be that of a third species. It is five inches long, and the valves very thin and membranaceous. I should be curious to know which is the species of Norfolk Island?"

---

* It will be observed that this is very far south of where the *Phormium tenax*, hitherto cultivated in Europe, may be supposed to have come from. Ed.

From what precedes, as several species appear to be confounded together, and as I have no certitude that the red- and green-flowered plant of Cherbourg is the same as the small red-flowered *Ph.*

Colensoi, I think it proper to assign, at least provisionally, a name to our species, and agreeably to Sir William Hooker's wish, I propose to dedicate it to the most celebrated English Navigator, who, first, discovered and made known the New Zealand Flax. I will then give a comparative description of the two kinds that are now in France; the diagnosis of the yellow-flowered one has been digested after the notes and drawings made at Paris by M. Decaisne, who had the kindness to communicate them to me; the description of the *Phormium* of Cherbourg has been written from the living plant.

PHORMIUM, *Forster*.

1. Ph. *tenax*; foliis supra viridibus subtus glaucescentibus, perigonii segmentis exterioribus aurantiaco-flavis, interioribus luteis, stylo luteo, ovario angulatim triquetro sulcato rubro. *Ph. tenax*, auct. passim.

2. Ph. *Cookianum*; foliis subconcoloribus, scapo subangulato glauco-virescente, perigonii segmentis exterioribus atro-sanguineis interioribus viridibus, stylo badio, ovario obtuse trigono luteo-virescente. An *Ph. Colensoi*, Hook. fil. *MSS.?*

Folia reniformia, rigida, angustiora, basi conduplicata, a medio ad apicem planiuscula, dorso carinata, integerrima, glabra, supra viridia, subtus subconcoloria, pallidiora, leviter striata. *Scapus* sub 4-pedalis, erecto-ascendens, subangulatus, apice subrugatus, glauco-virescens, ramosus. *Racemi* alterni, secundi, distantes, glauco-virescentes, iterum racemosi, in spathis membranaceis ante efflorescentiam erecto involuti, dein horizontaliter patentes. *Spathæ* lanceolatæ, sagittatæ, acutæ, conduplicatæ, carinatæ, membranaceæ, striatæ, luteo-virides, post efflorescentiam deciduæ. *Pedicelli* uniflori, articulati, nigro-brunnei, rugati, erecti. *Perigonii* corollini limbus sexpartitus in tubum obtuse triquetrum subarcuatum adscendentem pollicarem connivens; segmenta 3 exteriora paulo breviora, dorso elevatiora, atro-sanguinea, apice aurantiaca, subacuta, 3 interiora viridia apice rotundato-subreflexa concava. *Stamina* sex exserta, inæqualia, filamentis coccineis. Antheræ sagittatæ, acutæ, aurantiacæ. *Stylus* ascendens, badius. *Ovarium* obtuse trigonum, luteo-viride, sæpe tortum. *Capsula* subteres, 3–4-pollicaris, nigrescens. *Semina* plurima, oblonga, compressa, membranaceo-alata, aterrima, nitida.

During the anthesis, the tube of the perigone is filled with a sweet and viscous liquid. This *Phormium* blossomed at Cherbourg, from the 15th of May, 1847, to the end of June; the capsules took then a pretty large extension, but the ovules being void of embryo, produced but barren seeds. The leaves are more narrow, straight, stiff and pale, than those of the common *Phormium*, which, in all our gardens, grows in luxuriant tufts, and blossomed here in July, 1822, for the second time in France.

The introduction into Europe of this new kind of *Phormium*, may prove very important with respect to industry; it appears, indeed, to produce the fine flax, to which Sir Joseph Banks and Labillardière called the attention of the economists, and is a further instancc of the importance of specific distinctions, when they are laid down in the fields of practice.

Thus M. Decaisne demonstrated (Icon. agricult. pratiq. 1845, p. 767.) that the Chinese employ two kinds of nettles for the fabrication of their clothing, &c., and that we have received hitherto in France but a single kind, which produces a very inferior hemp. The same fact has perhaps taken place again as to the *Phormium*; the flax obtained in France proceeds from the yellow kind, and has proved to be of a bad quality, whilst the red-flowered plant produces the best flax used in New Zealand. Indeed, Dr. J. Dalton Hooker says, "that the *Ph. Colensoi* yields a very different and much finer flax than the other." It will be then of great importance to make comparative experiments between the flax of the two species we possess now in Cherbourg.

BOTANICAL INFORMATION.

Extract from the "INDIAN NEWS," *for April*, 1848: North-West Provinces.

Sometime in the year 1842, we entered at considerable length, in three different issues, on the absolute necessity that existed for the adoption of some immediate steps on the part of Government, to prevent the gradual deterioration and ultimate extinction of the forests still existing in these provinces, and which were rapidly disappearing before the axe of the woodman, no measures being in the meanwhile taken to replace the trees that were felled. We quoted largely the opinions submitted to Government by Dr. Falconer, Captain Cautley, and Mr. Neave, and also adduced the reasonings embodied in a paper drawn up for a similar purpose by the writer of the present article. We moreover took frequent opportunities of recurring to the subject, in the hope that repeated agitation might at length open the eyes of the authorities to the necessity of active interference, and were at one time so far successful, that a subordinate officer was appointed to the charge of the Dhera Dhoon forests, while Mr. Vansittart was superintendent; but the severe sickness of the first incumbent, and the subsequent occurrence of grave political events having intervened, the attention of Government was diverted from this very important subject. We are, however, happy to learn that the matter has been revived, and that a committee has lately been appointed, consisting of Colonel Boileau, superintendent engineer N. W. provinces, Mr. Edwards, superintendent of Simla, and Dr. Jameson, superintendent of the Botanical Gardens, North-west Provinces, to report on the forests in the Simla jurisdiction, as wood is becoming scarce in the neighbourhood of cantonments, and will of course become daily more so, if Government do not take immediate steps to remedy the evil. Dr. Jameson proceeds shortly to Simla, to meet his colleagues, and we hope soon to hear of some effectual measures being devised. In former days, the British Government considered the Hills so useless, that they actually searched everywhere for the heirs of the former hill chiefs, who had been driven from their possessions by the Goorkas, in order to re-instate them, and the result is, that even a few miles of hill land are procurable with the utmost difficulty, and that all the wood now supplied to the hill sanitaria is purchased from foreign states. Ere long, a large tract of hills, viz., the whole country between the Ganges and Jumna, will lapse to the Government, as the present Teeree Rajah is old and feeble, and cannot live much longer. On his territory coming under British rule, as we hope it will, there will be an uninterrupted tract of hill land in our possession, from the Jumna to the Kalee, in Kumaon, with the snowy range as a boundary to the north. It will be seen in the orders published this day, that Lieut. Strachey of the Engineers, brother we believe of the distinguished officer attached to the Thibet mission, has been placed at the disposal of the Lieut.-Governor for special duty in Kumaon. Lieut. Strachey is to make a physico-geographical survey of that province, and will be assisted in this important work by a number of naturalists, particularly those who have studied the productions of the N. W.; among them, we believe, are Majors Cautley and Madden, Messrs. Batten, Ramsay, Falconer, Jameson, and M. P. Edgeworth. To illustrate the survey, a series of maps, showing the distribution of plants and animals, will be appended; also sections showing the geological structure of the Himalayas, of which little is at present really known, from their their base to Thibet.

BOTANY (*chiefly Economic*) *of* SCINDE; *by* J. E. STOCKS, ESQ., M.D. Assistant Surgeon, H.E.I.C.S.

(Among the most valued of my botanical correspondents I am proud to number Dr. Stocks, of the Hon. the E. I. C. Service, and Vaccinator at Scinde. His leisure time has been for a long while devoted to the study of the Vegetable productions of Scinde, a country peculiarly favorably situated for obtaining information relative to such Gums and Drugs, and other specimens of the *Materia medica* as are sent to Europe by way of the Persian gulph and Bombay. One interesting notice of Scinde Botany, from the pen of the same gentleman, has already appeared at p. 30, of the suppl. to the 73rd volume of the Botanical Magazine (1847): and now I am sure my readers will derive pleasure and information from Mr. Stocks' catalogue of objects, almost entirely of vegetable origin, which he has most liberally sent for the Museum of the Royal gardens of Kew.

Nos. I., II., III.—Bits of *Scinde Counterpanes;* they are sold double, and wadded with cotton wool, and very comfortable in the bitter cold of winter in Scinde. As both the materials and dyes are Scinde *vegetable* productions, I add a short account of the process of dyeing, with specimens of nearly all the substances employed.—Step 1st. Clean the calico with camel's dung, Scinde soap and Sujjee khar (vide nos. X. and XI.)—2nd. Steep in water in which oil is suspended by Sujjee khar. This fastens the colours.—3rd. Steep in an infusion of Tamarisk galls (vide no. XIII., "Sakun"). Myrobolans may be used instead. In the one case it is called Sakun jo kus, in the other Hureer jo kus. —4th. Stamp with the *mordant* for the reds. This is made of a kind of alum (Pah), of Mayt (a saponaceous earth, no. VIII.), and *Khoor* (Scinde *Gum*—no. VII).—5th. Stamp with black *composition* where the black lines are intended to be. This is made with Catechu, Mayt (no. VIII.), and Khoor (no. VII.), mixed with a paste made of Jowàri flour ("*Sorghum vulgare*") and water in which old iron nails have been kept *for a long time in the sun,* and to which a few dates have been added.—6th. Boil with the madder wash. This takes in the places where the red mordant (process 4) has been stamped.—7th. Now wash well and clean.—8th. Apply the Kirrianah, or protecting paste, over the places (such as the future white spots) which you want protecting from process 9th., viz: Turmeric wash. The Kirrianah is made with lime, gum, and muttee (a soft earth, no. IX.)—9th. Wash, for a ground, with Turmeric wash, which is made by infusing Turmeric (no. XXI.), Pomegranate rind (no. VI.), and Fitkee or Phitkee (a kind of alum). All the parts not protected or not previously coloured red or black, now become yellow. If the ground is wanted green, then indigo is added to the Turmeric. —10th. *Stamp* the detached greens and blues (i. e. flowers, &c., *not* a ground colour).

Blues.—Indigo. (no. V.)

Greens, or Rung Chutto puk, i. e. Parrot-feather colour.	Indigo, Turmeric, Pomegranate, Fitkee.	make Green.

The above process is called "Madder style" or "Madder work." There is a finer style, called "Pen style" or "Pen work," done by the pen instead of stamps, but I can obtain no specimens at present in the Bazaar.

Price of a Counterpane (double), about 8*s.* to a *Sahib,* i. e. twice what they would charge to a native.

Dyes, &c., used in the above and sent in this parcel. .

No. IV. *Madder.* (Scinde.)
No. V. *Indigo.* (do.)
No. VI. *Pomegranate Rind.* (do.)

No. VII. *Scinde Gum; Khoor;* gum collected (indifferently?) from *Acacia Arabica, A. Farnesiana,* and *A. rupestris;* and a fourth tree which I have not yet seen. Used in ink, and paper-making—in calico dyeing, &c., &c.

No. VIII. *Mayt;* an earth found in Scinde, used for cleansing the hair (and in calico dyeing).

No. IX. *Muttee;* a saponaceous earth found in Scinde.

No. X. *Scinde Soap;* made of cocoa-nut oil and Sujjee khar.

No. XI. *Sujjee khar;* an impure carbonate of soda made from a *Salsola,* of which I sent specimens in December. The plant is burned and the fire is slaked towards the end of the process. An inferior kind (no. XII.) from *Salsola imbricata,* (Försk.) is also sold in the Bazaars. Both are used by the natives to wash their clothes (an important ceremony, only occurring about once a year), and, by the more civilized men of towns, to make soap with the addition of oil. The country people and hill tribes, however, prefer letting the *oil* accumulate in their clothes by constant use and never changing. Then, by washing with Sujjee khar, a soap is made in the clothes (as it were), and the oily secretions and dirt removed together. Salsolas are burned all over the world for this end. Vide Förskall, p. 70 in Sued. Memoir.; Ainslie, Mat. Med. vol. I., pages 397 and note, and 398 and note; Winchester in Bombay Geogr. Trans., whence it seems they burn Salsolas about Bagdad. The salt plants in Scinde are called generically "Lanee" with some prefix. They are Salsolas, Suedas, Xygophylla, &c.

No. XIII. *Sakun;* Tamarisk galls, got abundantly in Scinde, from a *tree* Tamarisk (*T. orientalis?*); whereas it is the bush Tamarisks (*Tam. dioica* and . . . .) which yield the Tamarisk Manna, secreted abundantly in Scinde, and which I will send at some future time.

No. XIV. *Men's Combs* of the Khow wood, (block of wood, no. XLII.)

No. XV. *Women's Combs* of do. do.

No. XVI. *Goat's Bell* (metal), whose tinkle in the thick jungle is by no means unpleasant.

No. XVII. Little *ivory* box (stained), with capsules of *Xygophyllum album* in it.

No. XVIII. *Calico Stamp.*

No. XIX.—XX. *Henna leaves*; by themselves, and made into a paste, as used in dyeing the hair *orange red.* Indigo being then added, it becomes the most magnificent black.

No. XXI. *Haid,* Turmeric; Turmeric used in dyeing calicoes yellow, &c., &c.

No. XXII. *Rawa*; Turmeric root, steeped in strong solutions of Tunkun khar (borate of soda), Pappur khar (carbonate of soda), to which lime juice is added. It becomes red outside and purple within, and when powdered is called Kookoo and Pinjur, and is used to give the *red* forehead marks of the Hindoos.

No. XXIII. *Heerakus*; viz., impure Sulph. Iron, used in dyeing leather, &c.

No. XXIV. *Pun; Typha elephantina* (Roxb.), (*T. angustifolia,* Herb. Schimper.); its flower-reeds, of which baskets, mats, and roofs for movable huts are made. (I cannot get its baskets made now, but *will* send them.)

No. XXV. *Twine* made from it.

No. XXVI. *Boor* or *Booree.* Booratoo cakes made from its pollen, kneaded with water. Much eaten.—The pollen grains can be seen with a microscope. Sold in all bazaars. Difficult to keep from ants and flies. It is made in July and August. The stock here is just exhausted (March 15th), and these are stale and fly-dunged specimens.

No. XXVII. *Sur; Arundo Karka??* The slender flower-stems make baskets (vide specimens *now* and *previously* sent). The thicker reeds at the base of the stem are made into admirable chairs and screens, bound together by *twine* made from its flowering stems well beaten out. (I wish I could send you a chair—I can readily, if you don't object to waiting for its passage round the Cape.)

No. XXVIII. Its fibrous material (*Moonyih*), as beaten out to form ropes.

No. XXIX. The ends of the flowering branches and their leaves, from which the above *Moonyih* or fibre is made by beating.

No. XXX. *Pfees ; Chanærops Ritchiana,* (Griff.) Its leaves, called *pfurah.*

No. XXXI. The same, somewhat beaten out.

No. XXXII. Common bazaar basket, in which natives carry home their purchases, and shopkeepers keep their stock ;—e. g. the druggists keep all their drugs in them, one piled over the other.

No. XXXIII. Common *Sandals,* as used by the Hill tribes. The foot passes below the string—and another string separates the great toe from the others.

No. XXXIV. Twine made from its leaves.

No. XXXV. *Tobacco ;* Shiraz.

No. XXXVI. — Kandahar.

No. XXXVII. — Hydrabad.

No. XXXVIII. — Omerkote, and towards Cutch.

No. XXXIX. — Shikarpoor.

No. XL. Rope from *Croatularia juncea* or the True "*Sun,*" cultivated in Scinde.

No. XLI. Paper from the same plant, used in native writings.

No. XLII. Small block of *Khow wood,* from which are made the native combs—specimens of which (14 and 15) (male and female) are added. It grows on the lofty Beloochistan hills. I hope to see it next week. The wood seems almost equal to Box.

No. XLIII. Block of *Loheero wood,* which also grows on the hills. It is very heavy: specimen sent is unseasoned.

No. XLIV. *Mocheris;* red gum from the Horse-radish tree, *Moringa pterosperma, Gærtn.*

No. XLV. *Adéree ja déna;* fruits of *Solanum Jacquinii,* used in all affections of the chest, and (in fumigation) to remove "the worm" which causes decayed teeth.

No. XLVI. Scinde *Aloes;* wild. Probably *A. Socotrina.*

No. XLVII. *Ahoobér,* Scindee.—*Hoobér,* Hindustani; fruit of juniper tree (called *Appurs,*) which grows on the Beloochistan hills. Sold in all bazaars in Scinde.

No. XLVIII. The well known *Puneer berries*—"infallible" in wind and all disorders of the bowels. Fresh are emetic, and coagulate milk, whence the name of the plant "cheese maker." Dried sp. and drawings are sent.*

No. XLIX. *Sónpat;* twigs and fruit of *Antirrhinum glaucum;* for bleeding from the nose.

No. L. *Gowzaban;* cooling—well known in the East. Any "*Asperifolia*" passes as Gowzaban.

No. LI. *Ruswul,* Scindee; *Rusoot,* Hindustani; extract of a *Berberis*—on which (*Lycium* of Dioscorides) vide "Royle in Linn. Tr., and Illust. Him. Bot."

No. LII. *Chown;* Scindee; used as an eye medicine in Scinde, as all over the East, on which vide "Royle in Ill. Him. Bot."—*Cassia absus;* ακακαλις.

No. LIII. Bitter leaves of *Rhazya stricta;* drunk in infusion by Scindees, as a cool potation in the *hot* (110°—129° F. in shade) weather.

No. LIV. *Talimkhana. Talibkhano.* Vide Ainslie, 2. 236. Seed of *Asteracantha longifolia,* a mucilaginous seed, in which kind of medicine the Indian bazaars are rich; having Quince seeds—Sweet Basil seeds—Plantain (*Plantago Ispaghula*) seeds—&c., &c.

No. LV. *Hingotey jo Pun;* seeds of *an* Asafætida plant, and probably (from Falconer's description) *the* Asafætida plant which, with two or three other Asafætida plants, grows near Khalât within hail (as it were) of Scinde.

---

* This plant forms a new genus of *Solaneæ,* soon to be published from drawings and notes of Dr. Stocks.

No. LVI. "*Beelam,*" Scindee;—"*Bhilawa,*" Hindustani; marking nut—*Semecarpus Anacardium.* Sold in all bazaars, for its uses in medicine, and domestic economy.

No. LVII. "*Areetho,*" Scindee;—"*Reetha,*" Hindustani; soap nut, used for washing silks.

No. LVIII. *Chikakai, Shikakai*; legume of *Acacia concinna,* used for its saponaceous qualities.

No. LIX. *Saht Kundroo*; collected on the lofty Beloochistan hills from a tree, whose fruits are eaten, and from whose seeds an oil is extracted. The tree is called "Gwen" by Brahosees—"Kunjuk" by the Persians—"Shurumna" by the Pattans.—It is sometimes also called "Gulungoor."

No. LX. Fruits of the above tree as sold in the bazaars.

No. LXI. *Goor*; or unrefined sugar of Scinde.

No. LXII. *Mahlib*; a fragrant seed, used to string into necklaces by women.—It is called *Gowla* in the Deccan—vide Ainslie, 2. p. 111. "*Gœula.*"

No. LXIII. Gum, collected in the Scinde forests from *Acacia Arabica* only.—The gum (no. 7) was bought in the bazaar and from several trees (probably).—This was collected by Major Scott.

No. LXIV. *Milhaytee,* or *Miltho Kathee* (i. e. sweet wood); root of *Abrus precatorius,* sold in bazaars. "Indian liquorice."

No. LXV. *Moodhéree*; twigs of *Antichorus depressus*—demulcent—sold in all bazaars.

No. LXVI. *Drammahs*; twigs of *Fagonia Mysurensis,* which seems identical with *F. Arabica.* Sold in all bazaars—and drunk in infusion for itching of body.—You seldom see a low Scindee not scratching himself: they are so dirty.

No. LXVII. "*Guggur,*" Scindee;—"*Googul,*" Hindustani; Bdellium of the Bible? *Balsamodendron Roxburghii.* Arnott. Very common in Scinde and Beloochistan—Used as incense—in medicine—and to strengthen mortar.

No. LXVIII. *Kumur Kus*; like kino. From the *Butea frondosa.*

No. LXIX. *Ramputtree,* or False Mace. Name in Bombay

Tariff. *Mohjot*,—Scinde name. Aril of a nutmeg, much used in spicery—It is oily but not aromatic.

No. LXX. *Musag*; bark of Walnut. From Muscat and Khelât.

No. LXXI. *Beh*; rhizome of *Nelumbium speciosum*. "*Pubnee*;" achenia of do. do. The queer receptacle is called "*Pabooro*." The plant itself is called "*Pubbun*." Rhizome, Achenia, leaf, and flower-stalks are eaten. The Rhizome yields a large revenue on lake Munchur. The *Nelumbium* and the *Nymphœa pubescens*, whose root-tubers (Lorheon) I sent in Decr., are invaluable to the natives. They are enumerated along with *fish* as the three things which the opening of a particular line of canal would bring to a tribe on its banks—in an old Scinde prophecy:—

Bhajay bund Arror
Hak wuhndo Hakro
Muchheon *Lórhee Beh*
Wenda Summay sookree.

Arror bund (dam) being broken
Always will flow the Hakro
Fishes *Lorhee Beh*
Will flow to the Summo as rare presents.

No. LXXII. "*Wur Kathee*," Scindee; "*Morad Sing*," Mahratta. Fruit of *Helicteres Isora*, which in "typical medicine" is regarded excellent against gripings and tormina.

No. LXXIII. *Nimooree*. Fruit of *Azedarachta Indica*. Tonic. Sold in all bazaars.

No. LXXIV. *Achenia* of *Nelumbium speciosum*, as sold in bazaars.

No. LXXV. Three boxes of the lacquered Hydrabad work. Snuff box and snuff.

No. LXXVI. Scent box and scented wool, most grateful to the black nose! to mine, perfectly disgusting—no wonder! the Scindee name for *Calamus aromaticus* is Kinee Kathee, i. e. "*stinking wood*."!

No. LXXVII. Round box for keeping jewels or any little articles. The coloured lac is put on in layers (sometimes four or five distinct and differently coloured ones); and various patterns are produced by cutting down to the layer of the particular colour you wish to show out. The wood is *Populus Euphratica, Báhún* or *Ban-wood* of the Scinde forests. The lac is Scinde.

No. LXXVIII. Scinde lac—found on *Acacia Arabica* and *Zizyphus Jujuba.*

No. LXXIX. *Jognee,* or seed lac.

No. LXXX. *Kalamdan,* or Scinde Pen-box, of the lacquered Hydrabad work.—The material is paper—the lac comes from the forests. The ink is made of lamp-black and Scinde gum. The pens are the stem or culm of *Saccharum spontaneum,* Roxb., very common in Scinde. The boxes they make in Affghanistan are very curious; the Cashmere ones are very beautiful; but the Persian ones could not be surpassed by the best Parisian artists. The Scinde ones are so-so. In the box is an inkstand, pens, cakes of ink, *paper-cutters* (i. e. native scissors), penknife, and bone-scoop to put water (when wanted) or ink (when fresh made) into the inkstand.—N. B. This pen-box is a very common affair, and such as a *dandy* Moonshee would be ashamed of. *He* would have a beautiful Kandahar or Herat-box, a silver inkstand, ornamented pens, &c. but it is sent as a specimen (entirely) of what Scindees *make* and *use.*—I may offer the same remark on other articles.

Leather.

The tanners of Kurrachee are good ones, and the hides go to Arabia and Affghanistan in large quantities. They are a low and despised caste, and live far from the town. Their tan-yards are well worth seeing—a business like manner they have, and a freedom from the sluttish way in which most Scindian manufactories are conducted. They take the hair off the hides with common salt and the acrid juice of the *Uk* or *Calotropis procera,* which grows in vast abundance near them. In Kurrachee they use the Kunro bark, *Rhizophora mucronata,* which is brought from the Delta of the Indus, mixed *a little* with the bark of the Kirruree or Chowree (*Ceriops Candolleana*). They seem to avoid the *Timmer* (*Avicennia*) and the *Chawr* (*Ægiceras*), though these grow in abundance. I think, however, they get bits of the *Hekor* (*Bruguiera Rheedii*) mixed with the *Rhizophora*. They beat up the *Rhizophora* and steep it in shallow (2–3 feet) vats with the hides. They afterwards sew up the hides and make them into a closed sac, into which they pour the strong *Rhizophora* liquor and let it strain through. Then they dry in the sun. Next they oil well, and afterwards rub in powdered *Chowdee* (Pomegranate rind), which gives the upper surface a slightly orange tinge and still further tans it. Then they stack.

No. LXXXI. Fibre of *Calotropis procera,* (C. Hamiltonii, *Wight.*) of which they make very soft rope. Native name of plant, *Uk.*

No. LXXXII. Bands made of *Leptadenia Jacquemontiana.* Native name of plant, *Kip.*

No. LXXXIII. Bands made of the *Crotalaria Burhia.* Native name of plant,—Lower Scinde, *Drunnoo;* Upper Scinde, *Thoomar.* These two last are more like the hay-bands of England, and are used for similar purposes—in binding straw—hut making, &c., &c. I cannot say with certainty, whether in some parts they do or do not *beat* these two last, and make twine and small ropes of them.

No. LXXXIV. Leather, tanned with *Kunro,* and surface rubbed with pomegranate bark.

No. LXXXV. *Kunro* (*Rhizophora*) bark.

No. LXXXVI. I don't think this specimen has had the pomegranate bark.

No. LXXXVII. Leather, tanned with *Kunro,* and which afterwards has had turmeric rubbed on to give it a yellow colour. N. B. About Beyla in Beloochistan, they tell me that they tan with the Tamarisk. I am going there in a few days and will see. Also, they say that in some parts they tan with *Khairee* chips which come from the Khairo tree, which I FANCY is the Catechu. But I have not seen it.

Acacia Tans.

No. LXXXVIII. Leather, tanned with the bark of *Acacia Arabica,* which grows into a magnificent forest tree, with wide spreading branches and a fine head, pleasing to the eye with its elegant light-green foliage, to which the yellow flowers are not a contrast, but (being in the same scale of colours) a relief and a shade, as it were. Surely Scinde might supply *extracts* useful to the English tanners, in its Mangrove forests and Acacia groves.

No. LXXXIX. Leather coloured red with Scinde *lac*, and slightly tanned with *Acacia*.

No. XC. Do., Do. *Wukkum* or *Bukkum* wood (*Cæsalpinia Sappan*) being used instead of Lac—Alum is also added.

No. XCI. *Wakkum* wood. This wood boiled with alkalies (*Pappur Khar*—i. e. Carb. Soda and *Alum*) yields a red liquor, much thrown about in the Hooly time (Hindoo Saturnalia). Starch is also made red with the liquor, and the red powder thrown over the clothes of those passing by. It is called Dattung in Mahratta.

No. XCII. Blackened leather. Tanned with *Babul* (*Acacia*) bark and *Heerakus* (impure sulph. iron) added. Heerakus is found in the Beloochistan hills.

No. XCIII. *Acacia* bark.

Dyes.

I send a few bits of muslin with different colours.

No. XCIV. Plain.

No. XCV. *Zurd*; Yellow. Turmeric and lime juice.

No. XCVI. *Sistakee*; Pista-coloured. Turmeric, indigo, lime juice.

No. XCVII. *Siyazee*; Onion-coloured (to wit, the external *scales* of an onion which are tinged pink). Safflower petals and lime juice.

No. XCVIII. *Gúlahee*; Rose-coloured. Safflower petals and lime juice.

No. XCIX. *Sudda-gúlahee*; Everlasting-rose coloured. Safflower petals and lime juice. These three have the same materials, but vary in the intensity and quality.

No. C. *Kasnee*; Chicory-flower-coloured. Safflower petals and indigo, and afterwards rapidly passed through a weak solution of indigo.

No. CI. *Soorkh*; red. Safflower petals, turmeric, and lime juice.

No. CII. *Narinjee*; Orange-coloured. Safflower petals, turmeric, lime juice, and a little indigo.

No. CIII. *Nafurmanee*; Marvel of Peru coloured. Safflower petals, lime juice, and some indigo.

No. CIV. *Wangunnee* or *Baingnee*; Egg-plant coloured. Safflower petals, lime juice, and *much* indigo.

No. CV. Safflower *seeds*, from which oil is obtained.

No. CVI. Safflower *petals*. When gathered they are well beaten with sticks to develope the colour, and made up and kept in shops in this state.

No. CVII. The same, beaten up as done just before using.

Notes written during a short botanical excursion to SHAH BILAWUL,* *by* J. E. STOCKS, M. D. Vaccinator at Scinde.

Kurrachee, 20th April, 1848.

You will think my letters are *not* like angel's visits: however, I think it better to send you the plants as fresh and green as I can. The present parcel is scarcely dry. I returned from Shah Bilawul highly gratified with my "proceeds."

I left Kurrachee on the 17th March, after sending the box for the Kew Museum, by that day's steamer. I rode to Muggur Peer, about 10 miles N. of Kurrachee, a pretty valley embosomed in hills, about a mile in length and breadth, in which are pleasant date-groves, with the white Musjids peeping above their feathery crown. Here lived and died a Mussulman Hermit, whose holiness and conduct tamed the ungainly alligators, and brought them to dwell near him living, and continue near his tomb and Musjid when he departed this life in the odour of sanctity.

---

* "Shah Bilawul, in Beloochistan, a hamlet of Lus, regarded with veneration by the Mahometans, in consequence of its containing the tomb of a reputed saint. It is situated in a narrow valley embosomed in the Hubb mountains, and watered by a small stream flowing from a fine spring which never fails. Here is a mosque, with a cemetery attached to it, and the Beloochees believe that peculiar blessings attend the souls of those buried there." Lat. 25° 49′, long. 67° 5′. (Thornton's Gazetteer of the countries adjacent to India, on the north-west.)

In a swamp, dotted with tussacks of grass,—in the very centre of the grove—fed by a hot spring, (110° F., yet in which flourishes a *Conferva,*) welling from the white and dazzling chalk-rock, —live 100 alligators of all sizes, from the Muggur King of 13ft. to the *comparatively* pretty and active youngster who has just chipped the shell. Torpid—inactive—they bask in the sun on the bank, or with their lower halves in the water, rest their broad breasts on a cushion of grass and gape continuously, or slowly swim, or ungainly waddle. If a sheep is killed and a shrill cry uttered, they become alive, and swim, paddle, waddle, rush over and against each other, and finally collect in a semicircle round the distributor, who gives them large mouthfuls of the quivering flesh, and raps them on the nose if they are unruly or impatient.

Here I just caught them in the act of fertilizing the date. A man ascended the male and cut off the yet *unopened* spathe. He split it open and took out the male inflorescence—white and confert like the head of a cauliflower. *Yet,* with the pollen quite ripe and falling in showers, if the inflorescence was shaken. On being asked (intentionally) what was the meaning of this strange and insane fit of cutting off the flowers which would yield him dates :—

"No, Sahib," said he, "these could never become dates—this is the male," (*Nur.*)

"What palaver is this? male indeed! where is your female?"

"Yonder, Sahib—this is the male."

After more of this, he explained that one was male, one the female (*madee*), "and this flour (*ata*) is the semen," (shaking the inflorescence and scattering the pollen.) He then ascended the female tree by the stumps of the old petioles, and with his axe, cleared away the old circle of leaves of 1847, and dressed up and made tidy (as it were) for the bridal. He had previously cut the male into little bits, some of which he gently shook over the female, and opening out her inflorescence a little, inserted one or two bits of the male in it, and descended.

I had a long talk with him after this, and he said God made some plants without either male or female—pointing to the Jujube,

—on which I made him confess the jujube *fruit* must be the female:—and some he made with male and female, separate, as in man, and he instanced the Date, the Puneer plant, and some others. However, he had probably never thought of it before, in doing what his fathers had done before him. But how *did* his fathers first find it out? Probably just as the superintendent of the commissariat gardens at Kurrachee, who noticed that *Dodonæa* (*female*), never ripened its seed till this year, when accidentally he transplanted another plant of it (which happened to be a male), and brought it from a distant part of the gardens near the other. (Vide the result in the boxfull of seeds I send you in this parcel.)

Next day I got to the Hubb River, separating Scinde from Beloochistan, where I found a Cafila from Affghanistan, just arrived with Asafœtida and Wool. The Asafœtida being in skins induced me to ask where it came from, (i. e. whether from Khelât, or Herat, or Kandahar,) remembering old Kæmpfer (Amœn. Exoticæ) had said, that Herat Asafœtida "utpote mollior pellibus ovinis involuta," whereas, Asa Larensis (Mekran and Belooch. Asafœtida,) "aridior saccis e foliis palmæ involuta;" which palm, by the way, is just the *Chamærops Ritchiana*. I found it came from Herat, and that *no* Khelât Asafœtida is exported. They gave me a little better idea of the *look* of the asafœtida plant, and told me it grows sparingly, considerably S. of Khelât, and not so *very* far from Kurrachee,—200 miles say. Casting another look of admiration at their massive drayman-like figures, long beards, and manly faces, I made my salaam, and left them to talk about the English Hakeem.

The next day I passed the defiles at the base of the lofty mountain Lakan, and to my great joy was surrounded by new faces in the plant line. I had hitherto seen but the old familiar features. The grey *Euphorbia*, size of a haycock, just in flower, holding up its thick and thorny branches like wax tapers in a chandelier, crowded at the ends with the small fleshy flowers, looking like so many rubies, and the Googul-stumps, and *Balsamodendron-faggots* (withered sticks), and the large bushes of *Capparis aphylla*, glaring like patches of flame even 100 yards off, so crowded are the brilliant scarlet flowers on the twiggy leafless branches.

But crossing the Vehrab river, which winds round the base of Lakan, the vegetation became profuse. Rain had fallen in abundance, and the bed of the river was studded with deep pools, between which the smoothly-ribbed sand, and the rolled stones, and the margin-bushes with straws and dirt entangled in their branches, evidenced the late force of the current, swollen by torrents which had poured down 2000—3000 feet.

How pleasant it was, proceeding onwards. Tufts of gigantic Grasses, and vast patches of the Fan Palm, and masses of the sweet smelling *Gibsonia*, filled up the little water-courses, and every where was heard the faint tinkle of the goat's bell, and the deeper boom from the herds of buffaloes and oxen, and every now and then, up the side of some tall hill, the white sheep and the brown goats would commence their winding ascent, stopping at each little tuft to browse, yet still ascending, till the broad hill-side was one mass of life. The elegant *Acacia Farnesiana* (which in the hills takes the place of *Acacia Arabica* of the plain,) filled the air with perfume, and the very baggage camels snorted with joy at seeing all kinds of food so plentiful, and especially did they eye the *Salvadora Indica*, and stretch out their long necks in the act of marching, and break off mouthfuls. *Plantagos, Resedæ, Oligomeris, Ochradenus, Didesmus, Anticharis, Trichodesma, Evolvulus, Convolvulus, Gypsophila, Arnebia, &c.*, commenced immediately, and occupied me to Shah Bilawul.

Shah Bilawul is a narrow ravine, 1½ miles long, by from 40 feet to 40 yards wide, which expands at the upper end a little. Here it is, a regular funnel, the rocks rising on the sides to 2000 feet (as I found by boiling water,) and down their sides trickled cool springs of water, which collected and formed a babbling brook down the valley. The Faqueers, with great taste, had planted all kinds of trees, Mangoes, Tamarinds (25 feet round), Neem (*Azadirachta*), *Albizzia Lebbec, Cordia Myxa, Pomegranate, Parkinsonia*, Babool (*Acacia Arabica*), Baver (*Ac. Farnesiana*), *Rottlera*, Bahun (*Populus Euphratica*), *Pandanus odoratissima, Eugenia*, Sweet Lime and Date

Palm: and the VINE, and the *Cæsalpinia Bonducella,* climbing up the trees. As at Muggur Peer, the Muggurs (alligators), so here, the peacocks. Shah Bilawul, whose white Musjid was at the end of the grove, had been fond of peacocks, and from 80 to 100 were here, screaming incessantly, and flying from tree to tree, and spreading their tails of pride,—tame too, and were fed by call.

The trees here, (from the depth of the valley losing one hour's morning, and one hour's evening sun,) had shot up high and straight, as well as got portly in bulk. They had plenty of water, of their own accord baring their roots, and sending them to meet the streams, but also having little channels flowing among them, one day in one direction, another day in another, by the care of the Faqueers. I remained here seven days, and you will see by my collection what was the nature of the Flora. I have not sent every plant I collected—about 200—but *all* the good ones. Many I knew in Guzerat, (*Evolvulus, &c.,*) and many I have sent you in other parcels. *Oligomeris, Trichodesma, Anticharis, Didesmus, Hyoscyamus, Forskœlia, Picridium, Talinum, &c.* There is here, an evident beginning of the vegetation of the lofty hills of Beloochistan. *Caragana polyacantha, Chamærops, Umbelliferæ, Tecoma, Olea, Punica, Lawsonia* and *Azadirachta,* truly wild. Now all this was in *March.* I am afraid I cannot get there in July, when I should reap an abundant harvest, but I *must* go in September to see the close, as I saw now the opening of the Annus Botanicus at Shah Bilawul.

One day I took an excursion to the mountain Lahout, where was a cave with stalactites from the roof, and water continually dripping, reminding me of Knaresborough, as the valley of Shah Bilawul did, *most forcibly,* of Matlock. Here was a place where Adam and Eve were said to have issued from the bowels of the earth. However, I disgusted my guide by paying more attention to *Hyoscyamus muticus* which grew hard by, than to his relation. You know our Indian mode of marching? I think you would have been amused with the sight of mine. For example: on *leaving* Shah Bilawul, the sun fast descending behind the lofty mountains, leaving the valley half light, half shade, with the broad shadows; the rippling brook (margined by large and picturesque Acacias,) forming little falls, and expanding below into deep pools; the narrow footpath obstructed by large blocks of stone detached from the sides of the hills, now crossing the brook, now winding under the base of a tall rock, now ascending a little along its steep sides. Then, "the goodly company." First and foremost my poodle-terrier, (fancying himself the guide, and most important person of the lot,) as happy as dog can be, looking back whenever he has scrambled to the top of a big block of stone, and saying: "Why don't you folks get on as actively as I do?" Then followed the camels, in Indian file: two with geological specimens, three with my personal baggage and tents, one with plants, drying boards, &c., and myself on the last. Two stone-collectors, two plant-collectors, five camel-men, all armed with big sticks, walk before and between, and by the side of the camels, encouraging them on the rough road by a guttural and prolonged grunt (like a cow lowing): "Ough—Ough—Ough—Kúbburdar, Ough—Ough—Ough—Kubburdár." The camel-men addressing the camels every now and then as they slip or stumble: "Hey, buchho! bèo wuddo putthrs! Hey, buchho! Ho child! another big stone! Ho child!" Last came my servant bearing a lanthern, (mark of his office,) and the guide, a fine handsome Beloochee with match-lock, belt, powder-horn, ball-bag, flint-case and sword.—NB. His tinder was the scurf off the leaves of the *Chamærops Ritchiana* dipped in saltpetre.—With these, trots a long-fleeced, long-horned Scinde goat, bleating incessantly, to avoid whom (if the truth must be told), the dog always keeps a-head, as my lady makes a point of rushing at him and rolling him over, wagging her tail rapidly as she does it and thinking it great fun. A great pest, by the way, was this same impudent goat, who used to watch when I was examining plants and slily eat the specimens out of my hand, besides hunting out the half-dried plants, devouring them and munching the paper.

I think, if I get to Shah Bilawul in autumn, which is most likely—nay, I *may* get there twice before the end of the year,—I might draw up a paper for your Journal of Botany, describing the route to Shah Bilawul, and the successive changes of the plants as in my notes, with a description of the road and the valley, and *notes at the end.*

J. E. S.

Notice of a Species of FUMARIA *new to Britain; by* MR. WILLIAM MITTEN.

Having found among the British *Fumariæ* in Mr. Borrer's herbarium, a plant not hitherto distinguished as a native of this country, I have thought it worth while to offer a transcript of its characters from Koch's Synopsis, and of its synonyms from the Monograffia delle Fumariaceæ of Parlatore, adding a few remarks.

Fumaria *agraria* (Lagasca); "fructibus subrotundis obtusis crenula emarginatis tuberculato-rugulosis, sepalis ovatis acutis dentatis corolla plus duplo brevioribus pedicello latioribus, bracteis pedicello fructifero brevioribus, racemis evolutis laxis, foliorum laciniis oblongis obovatisve." *Koch, Synopsis Fl. Germ. Ed.* 2, p. 1017.

Syn. "Fumaria agraria, *Lagasca! Elench. Pl. Hort. Reg. Bot. Madr. Ann.* 1816, *p.* 21, *n.* 282.—*Boiss! Voy. Bot. dans le midi de l' Espagne pendant l' année* 1837, *ex specimine.*

F. media *Dec! Syst. Nat. v.* 2, *p.* 134, *et Prodr. v.* 1, *p.* 130, *pro parte, ex ejus herbario.—Guss! Fl. Sic. Prodr.* 2, *p.* 354, *et Pl. exsicc. ex Neapoli.—Presl, Fl. Sic. v.* 1, *p.* 37.—*Tenore! Fl. Neapol. v.* 2, *p.* 118, *ex specimine.—Bertol! Pl. exsicc. ex Liguria.*

F. major, *Badarro! in Moretti, Bot. Ital.* 1, *p.* 10, *n.* 34, *ann.* 1826, *ex specimine.—Reichenb, Fl. Germ. exc. v.* 2, *p.* 697. (*ic. f.* 1222.)—*Gasparrini! Pl. exsicc. ex Calabria, prope Rosarnum.*

F. officinalis, β, major. *Moris! Fl. Sard. v.* 1, *p.* 90, *ex specimine.*

F. officinalis, β, grandiflora. *Dec. Syst. Nat. vol.* 2, *p.* 134, *et Prodr. v.* 1, *p.* 130."

HAB. Tintagel, Cornwall. *Mr. Borrer.*

To the synonyms, which have been taken verbatím from Parlatore, I have not thought it advisable to add that of *Fumaria media*, Loisel: Notices p. 101, et 102? and Reichenbach icon. f. 4455, both cited by Koch: for of the first, Koch observes: "In hanc ea quæ Loisel de sua *F. media* protulit magis quadrant quam in cæteris hujus generis species Europæas, sed auctores dubitant quin vera sit planta illius auctoris;" and Reichenbach's figure represents a plant so much like *F. officinalis*, that I know not how it differs from that species.

The only British *Fumaria*, with which the present handsome species can be compared, is *F. capreolata*, which in size and general appearance very much resembles it, from which, however, it may be clearly distinguished by its more erect and rigid stems, its smaller and more deeply toothed sepals, and its rough fruit.

Fumaria agraria appears to be found chiefly in the warmer parts of Europe, and can therefore only be expected to occur in the southern counties of England, where it may possibly have been overlooked for a state of *F. capreolata*; to which species indeed Mr. Borrer tells me he had referred it.

A plant occurs in this neighbourhood, in garden-ground, of which I find specimens from Germany, in Mr. Woods's herbarium, named *Fumaria peregrina*, Kübler, but which, at present, I am disposed to consider a small-flowered state of *F. capreolata*.

Hurstpierpoint, June, 1848.

NOTICES OF BOOKS.

De Vriese (W. H.); *Descriptions et Figures des* Plantes Nouvelles *et* Rares *du* Jardin Botanique *de l'Université de* Leide *et des principaux Jardins du Royaume des Pays Bas. Ouvrage dedié à Sa Majesté la Reine. Livraison.* 1. Imp. folio. Leide, 1847.

In this, the first Livraison of a very beautiful work, the talented Professor of Botany of the University of Leyden has illustrated with exquisite figures, and equally excellent descriptions, the four following plants :—

1. Ficus fulva, *Reinwardt*; a Java plant, "remarquable par l'elégance de son port, par la belle verdure de son feuillage, et les belles couleurs des stipules et de ses fruits, lorsqu'ils sont parvenus à leur maturité."

2. Zamia muricata, (fæm.) *Willd.*; native of Venezuela and New Grenada.

3. 4. Encephalartos Altensteinii, *Lehm.* Two plates are devoted to this noble species, an inhabitant of the interior of southern Africa. "Les recherches des savants et des voyageurs ont été éminemment fructueuses aux jardins et aux collections botaniques. Les Hollandais, dans les tems anciens de leur domination aux Indes Orientales, où la navigation, le commerce, et la science de la nature marchoient déja de commun accord, ont introduit ces belles et intéressantes formes dans leurs jardins, des Indes et du Cap de Bonne-Espérance. Il y a lieu d'admettre, que des individus de cette famille, qui, il y a environ un siècle, firent déja l'ornement des jardins Impériaux de Schoenbrunn, y ont été apportés de la Hollande. De nos jours, dans nos jardins on admire les formes les plus gigantesques de cette famille, que jamais on ait vues en Europe, et dont les troncs dénués de leur feuillage et leurs racines, sans en éprouver aucun dommage essentiel, ont essuyés toutes les chances d'un isolement total des conditions nécessaires à la végétation, et surtout de la température élevée propre aux terres tropiques, dont on les retire.

"Dans les galéries Royales, ou les beaux arts et la nature font le plus noble concours pour produire un effet vraiment enchanteur, parmi ces magnifiques Palmiers, ces Musacées énormes, parmi les Araucaires d'une rare grandeur, et ces centaines de Rhododendrons en arbre, on admire une Cycadée du genre *Encephalartos*, d'un développement extraordinaire, qui vient de fleurir à trois cônes mâles et que la bienveillance du Roi a daigné mettre à ma disposition, s'il fut possible, au profit de la science."

5. The last plate of this noble work, exhibits the analyses of the preceding species, together with those of *Bromelia Comme-*

liniana, De Vriese, to be described doubtless in the succeeding livraison.

The drawings are chiefly executed by M. P. W. M. Trap, and do credit to the age and country.

PRITZEL, G. A.; THESAURUS LITERATURÆ BOTANICÆ, &c.

We take pleasure in announcing the appearance of the fourth fasciculus of this very useful book, which carries on the work, in the alphabetical arrangement of author's names, as far as "*Wessen*," and to the number of titles of works, 1117. Thus the alphabetical order will soon be completed, and then follow, "les livres anonymes et les publications périodiques ainsi qu'une table des Renvoyez."

PLANTÆ PREISSIANÆ; *sive Enumeratio Plantarum, quas in* AUSTRALIA OCCIDENTALI *et* MERIDIONALI-OCCIDENTALI *annis* 1838–41 *collegit* LUDOVICUS PREISS, Ph. Dr.: *partim ab aliis partim a se ipso determinatas descriptas illustratas, edidit* CHRISTIANUS LEHMANN. 2 vols, Hamburgh, 1844–1847.

We are glad to be able to announce the conclusion of this highly useful work on the Botany of Western Australia; for the editing of which, the botanical world is much indebted to Dr. Lehmann. The second volume includes a considerable number of Cryptogamiæ (though our English Herbaria are still rich in unpublished species of that colony,) and an appendix, together with a double index: the first following the order of the numbers in the distributed collections of Dr. Preiss: the second alphabetical.

TRAUTVETTER, DR. E. R.; PLANTARUM IMAGINES *et* DESCRIPTIONES FLORAM ROSSICAM *illustrantes*. Monachii; 1844. Fasc. 1–8.

We have elsewhere noticed, and with commendation, this useful work. Each fasciculus, in small 4to, contains five neat outline figures, with analyses, of the rare or little known plants of Russia, accompanied by corresponding descriptions in Latin. A hundred such plants will constitute a volume. The vast extent of Russian dominion in the northern hemisphere, and it is destined to include species of the North American, as well the European and Asiatic territories, render this work important to those engaged in the study of the botany of all our temperate and northern regions, both of the old and the new world. The students of the North American Flora, and especially those of our own newly acquired possessions in north-western India, as of the "countries adjacent to this part of India," so admirably described in the "*Gazetteer*," recently published by Edward Thornton, Esq., will find this work, along with Ledebour's Flora Rossica, most useful in their botanical researches: and all will tend to increase considerably our knowledge of the geographical distribution of plants. We trust this work will meet with the encouragement it deserves.

EMERSON, G. B.; *Report on the* TREES *and* SHRUBS *growing naturally in the forests of* MASSACHUSETTS: *published agreeably to an order of the legislature, on the Zoological and Botanical survey of the state.* Boston. 1846.

It is worthy of a great nation, like that of North America, to employ its scientific men, as it is now doing, in reporting on the natural productions and resources of its vast continent. The present volume concludes the work of the commission on the zoological and botanical survey of the State. It has been prepared with especial reference to the instructions of Gov. Everett, and directing the commissioners, "to keep carefully in view the *economical* relations of every subject of their enquiry."

Much on the subject was done by Michaux in his North American Sylva. But the progress of botany, and experience in the uses and qualities of the objects under consideration, have thrown a new light on the history of trees and shrubs: and Mr. Emerson seems to have availed himself of the information to be obtained from books, from personal friends, and from his own practical knowledge. The work is accompanied by seventeen neatly executed plates, of which, eleven are Oaks, four Hickories, one Nettle tree, and one the Tupelo tree.

We should have been glad also to have seen a synopsis of the genera and species, by which their identity could have been at once determined.

TUCKERMAN, EWD. A. M.; LICHENES AMERICÆ SEPTENTRIONALIS *Exsiccati*. Fasc. I. et II. Cantabrigiæ, Nov. Angl., 1847.

Assuredly one of the most promising and enthusiastic botanists at this time in North America, is Mr. Ewd. Tuckerman of Boston. Scarcely was our pen dry after writing the brief notice of the "Synopsis of Lichens of the northern United States and British America," than we were gratified by the appearance of the two (in one) beautiful fasciculi of dried specimens published by the same author. The specimens are excellent, and they form a volume of fifty species; the descriptions of which are of course given in the synopsis.

The same parcel also brought us a Memoir from the same author, extracted from Silliman's Journal, on some interesting plants of New England, in which the specific distinctions of several new or dubious species, are treated of with much good sense and judgment.

But the work in which Mr. Tuckerman is now particularly engaged, is a Monograph of the Genus *Potamogeton,* a genus requiring elucidation no less than *Cuscuta,* which has been so ably illustrated by another North American botanist, Dr. Engelmann. Botanists generally cannot do better than send to Mr. Tuckerman, specimens of Potomogetons from all parts of the world, or the loan of such as require to be returned.

PAPPE, DR. L.; *List of* SOUTH AFRICAN INDIGENOUS PLANTS, *used as remedies by the colonists.* Cape Town. 1847.

Under this modest title Dr. Pappe has given a catalogue, with a notice of the properties of seventy indigenous plants, which have been used as remedies by the colonists at the Cape of Good Hope, arranged according to the natural system of De Candolle. "In a country like South Africa," says the author, "which is even now but thinly populated, and where the inhabitants in some parts are often deprived of medical aid, it is not to be wondered at that they are obliged to try the efficacy of the different remedies within their reach. Many a plant has thus been used here as a medicine in various diseases, as well by the savage, as by the colonist living in the more remote districts, and some of these drugs have already found their way into Europe." Such a little work from the pen of an accomplished practitioner cannot fail to be of great service to the colony, and it ought to be largely distributed, especially in the districts remote from towns.

Revisio Critica CASUARINARUM; auctore F. A. G. MIQUEL, Instituti Regii Socio; cum tabulis XII. Amstelodami, 1848. 4to.

The able author here enters into a critical examination of the *Casuarinæ*; followed by a "Conspectus specierum," and then by a full botanical history of thirty-three species, accompanied by a great number of illustrative figures, analyses, &c., on twelve folio plates. Dr. Miquel has spared no pains to render this monograph as perfect as possible, and besides the specimens in his own Herbarium, has had the use of the whole of the Hookerian collection, so rich in Australasian species.

FICUUM SPECIES NIGRITIANÆ; *illustravit* F. A. G. MIQUEL, *Botanices Professor Amstelodamensis.*

(TAB. XII. XIII. XIV. XV.)

[As the tropical western African species of *Ficus*, including all those of the Niger Expedition, will be described in the "Flora" of that Voyage now nearly ready for publication, it only remains for us to give the names of those here represented by the pencil of Dr. Miquel, and their place in the Monography published in this work.]—ED.

TAB. XII.

A. Urostigma Vogelii, *Miq. in Hook. Fl. Nigrit. et Miq. Prodr. Monogr. Fic. vol.* 6, *hujusce op. p.* 553.

B. Urostigma rubicundum, *Miq. in Hook. Fl. Nigrit. et l. c. p.* 553.

TAB. XIII.

A. Urostigma elegans, *Miq. in Hook. Fl. Nigrit. et in l. c. p.* 557, *n.* 87.

B. Urostigma ottoniæfolium, *Miq. in Hook. Fl. Nigrit. et in vol.* 6, *hujusce operis, p.* 557, *n.* 88.

C. Urostigma Thonningii, *Miq. in Hook. Fl. Nigrit. et in l. c. p.* 557, *n.* 89.

TAB. XIV.

A. Sycomorus Thonningiana, *Miq. in Hook. Fl. Nigrit. et supra, in hoc vol. p.* 112, *n.* 6.

B. Sycomorus Guineensis, *Miq. in Hook. Fl. Nigrit. et supra, l. c. p.* 112, *n.* 8.

C. Ficus exasperata, *Vahl, Enum. n. p.* 197, *Miq. supra, p.* 231, *n.* 38.

TAB. XV.

A. Ficus ludens, *Miq. in Hook. Fl. Nigrit. et supra, p.* 224, *n.* 14.

B. Ficus asperifolia, *Miq. in Hook. Fl. Nigrit. et supra, p.* 231, *n.* 39.

NOTE ON ANEMIA SEEMANNI, *Hook.*; by W. J. H.

TAB. XVI.

The *Anemiæ*, like other ferns, are difficult to discriminate, and we should despair of characterizing many of them, except by the aid of figures; and even then it behoves us to form new species with great caution, and not to assert that they are such too positively.

The present individual sent from Taboga, near Panama, did strike me on first sight as being not only a very beautiful but a very distinct species, which I wish to dedicate to its discoverer, now on a botanical voyage in H.M.S. Herald. It must not, however, be concealed that it is very closely allied to *A. humilis*, Sw., (Osmunda humilis, *Cav. Ic. v.* 6, *p.* 592, *f.* 3,) from the same country, and to the *Anemia pilosa*, Mart, and Galeot. Fil. p. 19, t. 2, f. 1, from the Cordillera of Oaxaca, and which I consider identical with *A. humilis*. It differs in the smaller size, in the fewer, shorter, rounder, and less compound spikes.

ANEMIA SEEMANNI, *Hook.*

Humilis, caudice repente villosissime paleaceo, frondibus cæspitosis pilosis pinnatis, stipitibus brevibus, foliolis obovato-rotundatis sub-oblique cuneatis obscure lobatis minute crenulatis approximatis, sterilibus 7-8, fertilibus sub-4, terminali cuneato-flabellato, pedunculis binis (una cum fronde fertili) brevi-stipitatis stipite 4-plo longioribus, spica anguste lineari-oblonga sub-simplici. (TAB. XVI.)

HAB. Taboga, near Panama, *W. Seemann.*

TAB. XVI. Fig. 1. Capsules :—*magnified.*

Note on Ranunculus Javanicus, *Bl.*; by W. J. H.

Tab. XVII.

Beautiful specimens of this plant, in flower and in fruit, gathered by Mr. Thos. Lobb, in Java, enable me to give a representation of the species, and some further particulars than are contained in Blume's "Bijdragen."

Ranunculus Javanicus, *Bl.*

Parce pilosus, caulibus elongatis flagelliformibus, foliis omnibus petiolatis (radicalibus magnis longissime) inferioribus oblongo-cordatis obtusis crenatis superioribus remotis cordatis ovatisve supremis lanceolatis incisis, pedunculis oppositifoliis unifloris, sepalis patentibus hirsutis, fructus capitulis globosis, acheniis ovatis punctatis stylo incrassato brevi terminatis.

R. Javanicus, *Blume, Bijdr.* 1, *p.* 3.

Hab. By mountain rivulets in Java, *Blume; Thomas Lobb.*

Professor Blume justly allies this to *R. Bonariensis*; it belongs to the same group, but it is a much larger and handsomer species, sparingly and unequally hairy, or rather hispid with appressed rigid leaves, most so on the young leaves and apices of the stems. These stems are simple in all the specimens I have seen, weak, flagelliform, a foot and a half long, rarely rooting. Radical leaves 4-5 inches long (upon petioles sometimes a foot in length), oblong or ovato-cordate, obtuse, crenated, with a very deep and narrow sinus at the base, the lobes of which generally overlap each other. Cauline leaves remote, on shorter petioles, the lower ones broadly cordate, with a wide sinus, becoming gradually smaller upwards, and narrower, till the upper ones are almost lanceolate, and more or less incised. Sheaths of the petioles long, membranaceous, hispid. Peduncles 1-2 inches long, inserted opposite the leaves, single-flowered. Petals obovate, about twice as long as the hairy sepals; nectariferous scale near the base. Head of fruit globose, as large as a good sized pea. Achenia rather numerous, ovate, slightly laterally compressed, dotted, terminated by a rather short, recurved, or uncinate style.

Tab. XVII. Fig. 1. Petal. f. 2, achenium :—*magnified.*

Notice of a new species of PENTAGONIA (*Ord.* Rubiaceæ), *Benth.*, from Panama, discovered by Mr. Seemann; by W. J. H.

(TAB. XVIII.)

In Mr. Bentham's "Botany of the Voyage of H.M.S. Sulphur," he has figured and described, p. 105, tab. 39, a very remarkable new genus from Panama, under the name of *Pentagonia,* of the tribe of *Rondeletieæ,* Fam. *Rubiaceæ.* One species only was known to Mr. Bentham, *P. macrophylla.* Among a collection lately made in the southern extremity of the isthmus of Panama, by Mr. Seemann, is another plant, which, differing as it does in some remarkable particulars from *P. macrophylla,* neverless did at once so strike its discoverer as of that genus, that he sent it home with the appropriate name of *Pentagonia pinnatifida* attached to it. A tolerably careful analysis of the specimens, of which it is to be regretted the flowers are not in a very perfect state, confirms the view taken of it by Mr. Seemann, and I gladly adopt his name.

PENTAGONIA PINNATIFIDA. *Seem. mst.*

Hexamera, foliis maximis pinnatifidis longe petiolatis, petiolis basi utrinque auriculatis, calycibus tubulosis apice 6-dentatis intus pilosis basi squamis 6-ovatis pubescentibus instructis, corolla tubulosa calycem vix superante apice 6-dentato. (TAB. XVIII.)

HAB. Cupica, at the southern extremity, and on the Pacific side, of the isthmus of Panama. *W. Seemann.*

Characters common to this and to *P. macrophylla,* and which may be esteemed of generic importance, are the general aspect of the two, the great size of the foliage, the very peculiar reticulation, best seen on the under side of the leaf, as exhibited at *f.* 6 of our plate; the size and shape of the stipules; inflorescence with its copious bracteas; the general structure of ovary, style and stigma, with the cup-shaped epigynous disk; the similarity of the stamens and hairyness of the filaments.

Our plant differs from Mr. Bentham's, remarkably, in the pinnatifid leaves, in the two great auricles, one on each side the base of the petiole, in the hexamerous flowers, the very elongated free position of the tube of the calyx, which, moreover, has six conspicuous scales in the inside near the base, and in the very elongated cylindrical tube of the corolla, which, as well as the calyx, is 6-toothed rather than 6-lobed at the limb.

Notwithstanding the somewhat decayed state of the flowers, the above characters may be relied upon ; and should future observations discover marks sufficient to constitute of our present plant a new genus, I cannot but wish it should have the name of its discoverer, *Seemannia.*

Tab. XVIII. Fig. 1, Bractea; and f. 2, fascicle of flowers, *nat. size*; f. 3, vertical section of ovary; f. 4, calyx laid open (and pistil) ; f. 5, corolla laid open; f. 6, portion of a leaf, underside; more or less *magnified.*

Note on the Genus Benjaminia, *Mart. referred by* Ludw. Benjamin *to the family of* Utricularieæ; *by* G. Bentham, Esq.

The examination and determination of *Utricularia*, from dried specimens, is a matter of peculiar difficulty on account of the extreme tenuity and delicacy of the flowers. It is, therefore, highly satisfactory to see it taken up by a young botanist who has evidently bestowed great pains in the detailed examination of those species of which he had specimens at his command, and the result has already been a monograph of the Brasilian species in Endlicher and Martius' Flora Brasiliensis, a sketch of the order and description of many new species in the twentieth volume of the Linnæa, and an enumeration of tropical American species in the same volume of that periodical. He has, however, added a genus to the order (to which he had at first given the name of *Quinquelobus*, but which Martius requested, out of compliment to his exertions, permission to publish under the name of *Benjaminia*), which struck me at once as anomalous, from its opposite inflorescence, and other characters; and on looking into the species, I was surprised to find that two of them (or at any rate specimens from the same collections, with corresponding nnmbers) had been referred by myself to the order *Scrophulariaceæ*; viz.:—n. 4347 of Gardner, which is the *Benjaminia utricularioides*, and my *Herpestes reflexa*, and n. 2276 of Cuming's Philippine island and Malacca collection (from Malacca), which is the *Benjaminia glabra*, and which I had considered as closely allied to, if not the same as *Limnophila gratioloides var. β. myriophylloides.* In the case of both of these plants I had formerly examined flowers, and clearly ascertained that the stamens were, in insertion and form, those of the genera to which I had referred them; my specimens do not admit of my now re-examining these organs, but I have dissected another capsule of each species, and again found it in both cases to be bilocular with axile placentation. Mr. Benjamin does not figure or describe the placentation, nor does he specially refer to the position of the stamens in either of these species, and I must therefore conclude that they are both true *Scrophulariaceæ*, and not *Utricularieæ*, and I see no reason for removing them from the genera where I had placed them.

This is not, however, the first instance in which the reduction of the foliage to capillary segments, by the action of water, has occasioned mistakes, by the similarity of aspect it gives to plants belonging to families far removed from each other. It is not uncommon to find in herbaria, in the cover of *Myriophyllum*, specimens of *Ranunculus*, *Cabomba*, *Ceratophyllum*, *Limnophila*, *Dysophylla*, *Anacharis*, &c., and the *Limnophila gratioloides* had been already described among *Caryophylleæ* and among *Primulaceæ*.

What the two remaining species of *Benjaminiæ* may be, I cannot tell without seeing the specimens, but from Mr. Benjamin's description, I should guess the *Benjaminia splendens* to be *Dopatrium lobelioides*, and the *B. minor* to be *Dopatrium nudicaule*.

Account of a new BRITISH SAXIFRAGE; by W. H. HARVEY, M.D. &c., Professor of Botany to the Royal Dublin Society.

(*With a Plate*, TAB. XIX.)

The announcement of a new British Saxifrage carries, on the face of it, a mark of doubt; especially as the one I have to introduce belongs to the group of *S. umbrosa*, a group almost proverbially variable and uncertain in a variable and uncertain genus. I must also admit that our new plant was not originally found in a flowering state, and has produced the only flowers which have been seen after having been cultivated for three years in a garden. This circumstance, for the present, may prejudice many persons against receiving the new plant into the calendar; but if not a good species, a point which I leave to botanists to decide, all must admit that it is at least a very remarkable variety, and as such, is worthy of being figured, and of having attention directed to it. The shape of the leaves is very peculiar. They are much longer and more spathulate than those of any other of the *umbrosa* group that I have seen, and almost remind one of those of *S. cotyledon* and its allies. But distinctions derived from the leaves are not those on which, in this genus, I am disposed to place much reliance, for it must be owned that the leaves of *S. umbrosa*, *S. Geum*, and their allies vary extremely in outline; in the length of the petiole, in the crenatures of the margin, in pubescence, in short, in all their characters. This new species (or variety), however, is chiefly characterized by differences in the structure of the flower, and these are so marked, that it can scarcely be placed in the same section of the genus as *S. umbrosa*, but rather belongs to the group of *S. nivalis*. In the *umbrosa* group the calyx is parted to the base, the sepals are perfectly free from the ovary, and are strongly reflexed soon after the expansion of the flower. In our new species the calyx is gamosepalous, cleft two thirds of its length, the tubercular portion adheres to the base of the ovary, and the limb, instead of being reflexed, is simply spreading. Add to this, that the petals are much broader and more elliptical than in any of the group, and are elegantly dotted over the whole surface, and we have characters sufficient, I should hope, to mark a species even among a set so proverbially undefineable.

I propose to dedicate this plant to its discoverer, William Andrews, Esq., of Dublin, who has paid much attention to the Irish Saxifrages, particularly those of the *umbrosa* group, and who deserves much credit for the patience and success with which he has worked out this very puzzling set of plants. The following are its characters:—

Saxifraga Andrewsii; caule brevi, foliis rosulatis patentibus spathulatis obtusis glabris crassiusculis basi in petiolum subciliatum angustatis, obtuse dentatis margine tenui membranaceo, floribus paniculatis, pedunculo pedicillisque longiusculis glanduloso-hirsutis, sepalis basi coalitis ovario adhærentibus recurvo-patentibus (nec reflexis) oblongis obtusis glabriusculis margine anguste membranaceis, petalis calyce triplo longioribus late ellipticis vix emarginatis punctatis.

The history of the discovery I shall give in Mr. Andrews' own words:—"With regard to my Saxifrage," he writes, "I have but little to say beyond the following. Professor Allman, on the 25th of June, 1845, read a paper at one of the sectional meetings of the British Association, held at Cambridge, conveying my views of the Robertsonian Saxifrages. In the views, which were altogether in opposition to those advanced by Mr. Babington, and published by him in the Annals of Natural History for June, 1844, I stated, as my opinion, that all the forms of *Geum* and *umbrosa* of Ireland, were identical with those of the Pyrennees, and that forms of leaves of *Geum*, equally as obtusely crenate as those of the Pyrennees, were met with in Kerry. Further, that all these forms passed so completely into each other, that neither *hirsuta*, *elegans*, nor *serratifolia* had any pretension to specific difference. This view of the subject has since been confirmed by Mr. Spruce, as noted in the London Journal of Botany for July, 1846; but Mr. Babington has not yet found time to correct any of the statements in the Journal where they have been so positively asserted by him. To strengthen still further my points, I assiduously, in September, 1845, collected in my rambles in Kerry, every form of leaf of *Geum* and *umbrosa* that I could meet with, and among them found the very remarkable form of leaf of the plant that you have so kindly undertaken to draw and describe. The specimens of this last were collected, growing on moist cliffs in a mountain at the extreme termination of Glen Caragh, either Cluan or Clarabeg, I am not certain which. They were not in flower at the time of gathering. I removed roots to my garden, where they did not produce flowers till this season (June, 1848), when the more remarkable characters were apparent. I may mention that one of the most remarkable forms of *S. serratifolia* that I collected was at the entrance of Dingle Harbour, growing within the influence of high-water mark. So endless, however, are the forms of leaf and growth, in this family, that unless some good distinction of flower, or of fructification can be defined, and which I have no doubt that the present plant presents, it would be vain to attempt separation."

It is altogether on a difference in the floral organs, such as Mr. Andrews alludes to, that I propose to establish the present species, but it would greatly strengthen its claims were specimens flowering in a wild state collected and examined. So few persons visit the Kerry mountains in the early spring months, when the saxifrages are in blossom, that some time may yet elapse before the point is settled. Meanwhile our figure, taken from a cultivated individual, will serve to keep the plant in memory.

As I am on the subject of Kerry botany, I may add that *Simethis bicolor*, Kth. (*Anthericum planifolium*, Vand.) which was detected a year or two ago in Hampshire, has been found by Mr. Thaddeus O'Mahony, growing in a perfectly wild situation on hills near Derrynane Abbey, the seat of the O'Connells. The hills where this plant grows have probably never been turned up, and the plant has certainly never been cultivated in a neighbouring garden. A specimen, agreeing in all respects with a Portuguese one in the University Herbarium, was sent to me in June last.

Tab. XIX. Fig. 1. Flower-bud; f. 2, petal; f. 3, anther; f. 4, bud from which the petals are removed; f. 5, section of the ovary:—all more or less *magnified*.

DECADES OF FUNGI.

Decade XX.; by the Rev. M. J. BERKELEY, M.A., F.L.S.

(*With Two Plates.* TAB. XX. and XXI. XXII.)

Tasmanian Fungi.

191. Agaricus (Amanita) *ananæceps*; n. s.; pileo amplo convexo glabro nitido, centro areolato; areolis verruca conica obsessis; margine lævi sed volva appendiculato; stipite elongato marginato-bulboso versus lamellas in stipitem porrectas incrassato; velo mox obliterato. Gunn, No. 1777, 1805.

HAB. Penguite; on the ground. March.

Pileus three and a half to four inches across, convex, quite smooth and shining, areolate in the centre, each area producing an angular conical wart; sometimes however, the divisions are not distinctly marked, but there is simply a smooth space between the warts; margin even, in half-grown individuals appendiculate.

Stem three inches or more high, half an inch thick in the centre, strongly bulbous below, incrassated above, at first furfuraceous, but at length smooth. Veil soon vanishing.

Gills moderately broad, attenuated behind, and forming raised lines for a short distance on the stem.

Very nearly allied to A. *nitidus*, Fries, but differing in its longer stem, and in well developed individuals in its distinctly areolate surface, giving it the resemblance of a pine-apple, from whence its name is derived.

192. A. (Pleurotus) phosphorus, n. s.; pileis infundibuliformibus glabris pallidis dense cæspitosis; stipitibus utplurimum centralibus deorsum attenuatis subsericeis, supra e lamellis latiusculis integris descendentibus lineatis. Gunn, No. 1361.

HAB. On roots of trees. Oct., 1845, and abundant in the succeeding January and February.

Forming dense masses, or occasionally growing singly. Pilei three to five inches across, infundibuliform pale, yellowish brown, smooth or very rarely minutely cracked or virgate; fleshy in the centre, thin at the margin, which is slightly lobed. Stem one to two inches high, attenuated below, solid, slightly silky, lineated above; or in solitary individuals, short and obtuse. Gills rather broad above, attenuated and decurrent behind, and forming lines on the stems; interstices even. Spores broadly ovate, white, or when seen in a dense mass, tan-coloured.*

The solitary individuals present quite a distinct aspect, having a short obtuse and less silky stem, and the gills, though much attenuated at the base, ending abruptly. Occasionally a pileus of a similar form occurs in the midst of a tuft. So phosphorescent, that Mr. Gunn was able to read by its light, and it remained luminous for six days or more after being gathered. It is certainly distinct from the two phosphorescent Australian species, A. *nidiformis*, and A. *lampas*, described in my first Century.

A curious specimen, supposed to be of this species, or possibly A. *salignus*, was found growing on *Acacia dealbata*, from the cavity in which the caterpillar of a Cossus had been nursed, and entirely filling up the shell of the Pupa with its mycelium, so as at first sight to appear parasitic on the insect.

193. A. (Pleurotus) *affixus*, n. s.; latissime gregarius; pileo demum latere affixo cyphellæformi plicato-striato; stipite brevi tenui reflexo; lamellis adscendentibus arcuatis adnatis. Gunn, No. 1788.

Hab. On bark of a young tree of *Eucalyptus amygdalina*. Penguite, Jan. 6, 1846.

Covering the bark in broad patches.

Pileus one line and a half broad, reflexed and attached by the side, cup-shaped, plicato-striate, smooth, membranaceous. Stems short, smooth, recurved, adnate, with the gills rather distant and thick, ascending, arched, attached to the apex of the stem only. The matrix is here and there clothed with a thin, white, downy mycelium. The colour of the species when fresh is probably white, with a yellowish or rufous tinge on the gills, which, in the dry plant, have a smooth shining hymenium. I do not see any gelatinous stratum.

---

* This perhaps arises from their being impregnated with the colouring matter of the Pileus. See Tul. in Ann. des Sc. Nat. 3 Ser. v. 5. p. 361.

194. A. (Crepidotus) *hepatochrous*, n. s.; gregarius; pileo horizontali subcarnoso sinuato glabro hepatico; stipite brevissimo albo, primum basi disciformi affixo; lamellis luteo-cinnamomeis albo-marginatis. Gunn, No. 1787.

Hab. On bark. May, 1845.

Gregarious, but scarcely crowded.

Pileus at first globose, with a short central stem, but soon extended on one side, and at length extremely eccentric, smooth, rather undulated, one inch or more broad, slightly fleshy, not gelatinous, of a deep liver-brown. Stem always extremely short, white, attached by a round disc, the margin of which is byssoid. Gills moderately distant, rather ventricose, rounded behind, of a pale cinnamon, edged with white, not echinulate. Spores oval, ferruginous.

Allied to A. *mollis*, from which, however, it differs in many respects. Its spores are far smaller than in that species.

195. A. (Crepidotus) *insidiosus*, n. s.; pileo demum resupinato adfixo membranaceo margine tomentoso, stipite tenui brevissimo; lamellis latiusculis postice attenuatis adnexis aquose luteo-umbrinis.

Hab. Penguite, on bark. With No. 1787. May, 1845.

Gregarious.

Pileus three quarters of an inch to one inch broad, at length quite resupinate and fixed to the matrix, membranaceous; edge pubescent. Stem very short and slender. Gills watery yellow-brown, attenuated behind; adnexed. Spores yellow-brown, ovate.

Much resembling the last, with which it agrees in the colour and size of the spores. The pileus, however, is resupinate and membranaceous, the stem very slender; the gills not evidently white-margined. The whole plant, when dry, is of a watery yellow-brown.

196. Boletus *fruticicola*, n. sp.; pileo amplo convexo glabrato rubido; stipite æquali glabriusculo lævi e mycelio glebam fruticolam formante oriente; tubis liberis compositis ore aurantio-flavo. Gunn, No. 1775.

HAB. Penguite, attached to roots of *Pleurandra riparia.*

Solitary or slightly cæspitose.

Pileus fleshy, convex, at length occasionally cracked towards the margin, smooth red, five inches across. Stem nearly smooth, not reticulate, equal or slightly attenuated below, springing from a mass of earth traversed by mycelium, and surrounding the roots or base of the stems of *Pleurandra riparia.* Pores perfectly free, leaving a deep pit round the stem, compound irregular pale orange-yellow. Spores obovate, pointed below, of nearly the same size and shape as in B. *chrysenteron.*

Allied to the above-mentioned species, but differing in several particulars, and very remarkable from its peculiar habit, in which, perhaps, B. *sulfureus,* Krombholz, alone agrees with it. In the larger solitary specimens, the character of the free tubes is not so strongly marked.

197. Polyporus *pelliculosus,* n. s.; versiformis, demum fibroso-suberosus; pileo badio-fusco strigoso; margine albo; poris inæqualibus parvis, dissepimentis tenuibus lacerato-denticulatis.

HAB. On dead logs and roots of trees. Penguite. May, July.

Extremely variable in form and size, 1–6 inches across, orbicular with the rudiments of a stem, dimidiate or spathulate. Pileus, when dry, hard, composed of radiating fibres, some of which go towards the pores, others to the surface, which is clothed with rough, hispid, fasciculate hairs of a deep brown, with the interstices paler, sometimes distinctly zoned; margin obtuse or acute, white when fresh; substance white towards the pores, brownish towards the surface. Hymenium white; pores small $\frac{1}{50}$ of an inch across, irregular, unequal; dissepiments thin; edge toothed and lacerated.

This is evidently very closely allied to *P. Weinmannii,* Fr., but the pileus has no rufous tinge, and it is very hard when dry. The pores, as in that species, probably become brown when touched, as such an appearance is indicated in the specimens. The colour is nearly that of dry specimens of *P. resinosus.* I have about twenty specimens before me which exhibit great variety of form, but agree in their principal characters.

198. Geaster *tenuipes*, n. s.; peridio exteriore simplici multifido reflexo; interiore longe pedicellato ovato subtus leviter plicato; ore prominente conico plicato sulcato. Gunn. No. 1778.

HAB. On the ground.

Outer peridium thin, reflected, split to the middle into about eight lobes, marked with a circular pale disc, traces of which are visible even after the inner coat has entirely vanished; inner peridium half an inch in diameter, obovate, slightly plicate at the base, immarginate; peduncle two lines long, incrassated above, slender in the middle; aperture conical, prominent, with a slight depression round the base.

Nearly allied to the small form of *Geaster striatus*, but differing in its far longer peduncle, and slightly plicate base. The folds proceed from a circular disc formed by the apex of the stem.

199. Cyttaria *Gunnii*, Berk.; receptaculo globoso-pyriformi demum cavo; basi attenuatâ nec stipitiformi nec scabrâ; cupulis parvis. (TAB. XX. XXI.) Berk. in Hook. Antarct. Fl. vol. 2, p. 453. Gunn, no. 1375.

HAB. On living branches of *Fagus Cunninghamii*. Oct.

Growing gregariously on knobs of greater or less size in proportion to the branches on which they occur, at first pyriform, simply attenuated below without any distinct stem or scabrous coat; at length more or less globose and hollow, 1-2 inches in diameter more or less soft and flaccid when dry; cups numerous, with broad, irregular orifices. Asci rather short, cylindrical; sporidia, eight in each ascus, broadly elliptical. Hymenium soon obliterated.

This species was characterized in the Antarctic Flora; and I have nothing to add to the analysis there given, except the perfect sporidia. I am glad, however, of the opportunity of figuring so interesting a species from a very complete series of specimens.

TAB. XX. XXI. Fig. 1. Twig of *Fagus Cunninghamii* with small knobs covered with *Cyttaria Gunnii, nat. size.*

2. Large knob with *Cyttaria* in various stages of growth,

nat. size. 3. Vertical section, do. Fig. 4. Ascus with sporidia highly *magnified.*

200. Sphæria (Cordyceps) *Gunnii*, n. s. Entomogena; carnosa, capitulo cylindrico flavo sursum nigrescente; stipite elongato albo. Gunn, No. 1800. (TAB. XXII.)

On caterpillars of some *Cossus* or *Hepialus*, Franklin Village, near Lancaster. April 29, 1846.

Growing from the neck of a caterpillar buried deeply in sandy ground. Stem with caterpillar five to eighteen inches long, rarely branched, flexuous, rugged below, cylindrical, white, solid, collecting particles of sand by means of a few downy threads.

Head 2-3 inches long, $\frac{1}{8}$–$\frac{1}{4}$ of an inch thick, perfectly cylindrical or lanceolate, obtuse or subacute, sometimes compressed, yellow below with the top of the stem, becoming black above. Perithecia elongated, ostiola scarcely projecting beyond the surface. Asci fusiform, flexuous; inner membrane terminated by a bipartite globe, which sometimes gives off a third membrane in addition to the two which are always present. Sporidia short, truncate, cylindrical, forming long threads at length detached. The globe at the apex of the inner membrane is probably merely a modification of the process, obtuse above, and then contracted, which so often occurs in the same situation. Mr. Broome has observed the tip of the second membrane of the ascus to be occasionally quite distinct from the globular process, but pressed closely against it, exactly as is the case sometimes with pollen tubes which do not penetrate the embryo-sac.

This fine species is in reality nearer to *S. ophioglossoides* than *S. Robertsii*, though agreeing with the latter so closely in habit. The sporidia are like those of the former species, and by no means of the latter. Were there any uniformity in the fructification, we might adopt the genus *Hypocrea*; but as the sporidia vary so extremely, being in *S. citrina* like those of *S. ophioglossoides*, while in *S. rufa*, they form a row of sixteen, it seems impossible to separate it simply on account of a slight difference in consistence.

The following account of the species is copied from Mr. Gunn's notes.

"Of this I send you numerous specimens preserved both in spirit and brine, by which you will better judge their natural size and appearance. It was found in great abundance in some sandy land which had never been cultivated about three miles from Penguite, by the boys attending Mr. W. H. Hawkes' school.

The caterpillar burrows in the ground to various depths, from four inches to a foot; and the fungus seemed to fill up the hole made by the caterpillar, which in all cases was erect. The caterpillar and stipes varied from five to eighteen inches in length, and were white, except about two or three (to four) inches, which projected above the surface of the ground, and were shaded off from the white colour below the ground to yellow at the surface, and thence to a deep olivaceous black at the extremity.

I got one specimen of this Sphæria about 1832, when the seasons were more rainy than they have been since until 1846, but had not seen it since, until Mr. Hawkes very kindly brought me some specimens, and drew my attention to it."

Mr. J. E. Gray informs me that the chrysalis sent as belonging to the caterpillar is evidently that of *Cossus* or *Hepialus* or probably of a new genus between the two of which *Hepialus virescens* (which produces *Sphæria Forbesii*) may be regarded as the type. "We have," says Mr. Gray, "a second species rather larger (better agreeing with the size of the Chrysalis case) from New Zealand, which differs from *H. virescens* in having reddish under-wings."

TAB. XXII. Fig. 1. Sphæria Gunnii, *nat. size*, in different states. 2. Ascus with its bipartite appendage. 3. Tip of ascus with necklaces of sporidia. In this instance there are three membranes. 4. Apex of case of sporidia separated from the appendage, as sketched by Mr. Broome. 5. Sporidia from Fig. 3, and a portion of a string of spores from a specimen in which the asci themselves were quite absorbed. 6. String of spores when young. All except the first very highly magnified.

Fungi described in the second Century now completed.

Agaricus *affixus*, B.
,, *albuminosus*, *ib.*
,, *ananæceps*, *ib.*
*,, *aspratus*, *ib.*
,, *continuus*, *ib.*
,, *crassus*, *ib.*
,, *crocophyllus*, *ib.*
,, *dasypeplus*, *ib.*
,, *episphæria*, *ib.*
,, *eurrhizus*, *ib.*
,, *fabaceus*, *ib.*
,, *hepatizon*, *ib.*
,, *hepatochrous*, *ib.*
,, *holocrocinus*, *ib.*
,, *insidiosus*, *ib.*
,, *lachnophyllus*, *ib.*
,, *phæophyllus*, *ib.*
,, *phosphorus*, *ib.*
,, *polychrous*, *ib.*
,, *rufo-albus*, *ib.*
,, *simulans*, *ib.*
,, *testudo*, *ib.*
,, *trachodes*, *ib.*
,, *versiformis*, *ib.*
,, *zeylanicus*, *ib.*
Aseröe *zeylanica*, *ib.*
Boletus *fruticicola*, *ib.*
Corticium *Drégeanum*, *ib.*
Cyttaria *Gunnii*, *ib.*
Dædalea, *pallida*, *ib.*
,, *pavonia*, *ib.*
Diplodia *Mori*, *ib.*
Geaster *tenuipes*, *ib.*
Heliomyces *Léveillianus*, B.
,, *Caryotæ*, *ib.*
Hexagonia *similis*, *ib.*
,, *sulcata*, *ib.*
Husseia *insignis*, *ib.*
Hydnum *diffractum*, *ib.*
Lactarius *calceolus*, *ib.*
Lentinus *cæspitosus*, *ib.*
,, *cartilagineus*, *ib.*
,, *giganteus*, *ib.*
,, *inconspicuus*, *ib.*
Lentinus *maculatus*, *ib.*
,, *obnubilus*, *ib.*
,, *revelatus*, *ib.*
,, *stenophyllus*, *ib.*
,, *subnudus*, *ib.*
Lenzites *Cratægi*, *ib.*
Leotia *elegans*, *ib.*
Lysurus *Gardneri*, *ib.*
Marasmius *clavæformis*, *ib.*
,, *fulviceps*, *ib.*
,, *hepaticus*, *ib.*
,, *pyrrhocephalus*, *ib.*
,, *sarmentosus*, *ib.*
,, *sulciceps*, *ib.*
Panus *angustatus*, *ib.*
,, *dealbatus*, *ib.*
†Paxillus *flavidus*, *ib.*
,, *porosus*, *ib.*
Peziza *fusispora*, *ib.*
Polyporus *anebus*, *ib.*
,, *brunneo-leucus*, *ib.*
,, *contractus*, *ib.*

---

* This beautiful species has been found in South Carolina, by Rev. M. A. Curtis.

† *Ag. rhodoxanthus*, Schwein.

Polyporus *dilatatus*, B.
,, *discipes, ib.*
,, *dryophilus, ib.*
,, *Endocrocinus, ib.*
,, *ferreus, ib.*
,, *fissus, ib.*
,, *galactinus, ib.*
,, *holosclerus, ib.*
,, *hypococcinus, ib.*
,, *molliusculus, ib.*
,, *pelliculosus, ib.*
,, *rhipidium, ib.*
,, *rubidus, ib.*
,, *secernibilis, ib.*
Polyporus *setiporus*, B.
,, *strigatus, ib.*
,, *vittatus, ib.*
Psilopezia *nummularia, ib.*
Simblum *gracile*, B.
Sphæria *argyrostigma, ib.*
,, *enteroxantha, ib.*
,, *Gardneri, ib.*
,, *Gunnii, ib.*
,, *Maydis, ib.**
,, *zeylanica, ib.*
Sphæronema *oxysporum, ib.*
Stereum *tenuissimum, ib.*
Thelephora *albo-marginata*, Schwein.
,, *cuticularis, ib.*
,, *subhepatica, ib.*
Trametes *colliculosus, ib.*
,, *levis, ib.*
,, *sepium, ib.*
Xerotus *griseus, ib.*

Enumeration of Leguminosæ, *indigenous to* Southern Asia, *and* Central *and* Southern Africa; *by* George Bentham, *Esq.*

(Continued from vol. iii., *p.* 365.*)*

XXVIII. Buchenrœdera, *Eckl. et Zeyh.—Aspalathi sp. E. Mey. et Auct.*

This genus was omitted in the conspectus of *Genisteæ* given above, vol. ii. p. 458, for I then supposed, after E. Meyer and others, that it was not to be distinguished from *Aspalathus*. Since, however, I have examined in detail the numerous species of the latter genus, it has appeared to me that its most natural limits are best indicated by the remarkable foliage peculiar to it, and it has become necessary to adopt Ecklon and Zeyher's *Buchenrœdera* for several species with petiolate leaves referred by others to *Aspalathus*. They have, moreover, some slight differences in the form of the calyx which is fuller, with a tendency on the part of the lateral teeth to approximate in pairs, as in *Lotononis*, and the claws of the petals are longer. The ovary is sessile with eight or ten ovules closely crowded together, the pod nearly that of the shortest podded *Aspalathi*, having usually but one perfect seed. Most of the species have stipules which do not exist in any *Aspalathus*. The genus, like *Aspalathus*, is confined to South Africa.

---

* This is the same species with Diplodia Zeæ, Lév.

* *Stipulis, saltem superioribus, foliaceis petiolo longioribus, floribus spicato-capitatis albidis v. flavicantibus.*

1. B. *holosericea*, adpresse sericea, foliolis cuneatis apiculatis, florum capitulis densis, bracteis ovatis oblongisve calyce villosissimo longioribus, petalis omnibus villosis subæqualibus, legumine villosissimo.—*Aspalathus holosericea*, E. Mey.! Comm. p. 37.—Habitus fere *Argyrolobii*. Pubes sericea rufescens. Foliola 3–4 lin. longa; petiolus 1–2 lin. Stipulæ petiolo dimidio v. subduplo longiores. Bracteæ 2 lin. longæ, sæpe 2 lin. latæ, acutæ, dense rufo-sericeæ.

Cafferland near Omgaziana and Morley, *Drège !*

2. B. *Meyeri* (Presl. Bot. Bem. p. 47) laxe sericea, foliolis cuneatis brevissime acuminatis, florum capitulis densis, bracteis anguste oblongis calyce villosissimo brevioribus, petalis omnibus villosis, vexillo alis carinaque dimidio longiore, legumine villosissimo.—*Aspalathus cuneata et retusa*, E. Mey.! Comm. p. 37.—Folia B. *holosericeæ* v. sæpius minora. Pubes laxior, albens v. rufescens. Bracteæ acutæ, calyce multo breviores, v. rarius acuminatæ eum fere æquantes. Calyx 2–2¼ lin. longus. Vexillum calyce duplo longius.

Cafferland, between the Buffel and Key rivers, and near Komga, *Drège !*

3. B. *alpina* (Eckl. et Zeyh. Enum. p. 195). Unknown to me. It is referred by Walpers to the B. *Meyeri*, but the charac-

ter given does not quite agree with that species, and the station is different.

To the north east of Cape Colony, on the Winterberg, near the Kliplaat river, *Ecklon and Zeyher*.

4. B. *multiflora* (Eckl. et Zeyh.! Enum. p. 195), adpresse sericea, foliolis cuneatis recurvo-mucronulatis, spicis oblongis laxiusculis v. rarius capitatis, bracteis cuneatis oblongisve calyce brevioribus, petalis villosis, vexillo alis carinaque longiore, legumine villoso.—*Aspalathus cuneata β. hamulosa*, E. Mey.! Comm. p. 37.—*A. polyantha*, Walp. Linnæa, 13, p. 485.—*Buchenrœdera gracilis*, Eckl. et Zeyh. Enum. p. 195, ex char.—Considered by E. Meyer to be a variety of B. *Meyeri*, but the appressed pubescence, and smaller flowers, either few in number, or arranged in a loose spike instead of a compact head, seem to indicate a distinct species. Should, however, this and the two preceding plants turn out to be mere varieties of one species, it should retain the name of B. *multiflora*.

Eastern provinces, chiefly Uitenhage and Albany. Zuurebergen, Gekau and Assagaybosch, *Drège!* Zuurebergen, near Graham's Town, and on the Fish river, *Ecklon and Zeyher!* Vanstaadensbergen, *Zeyher* n. 2335! also n. 3864 of *Burchell!*

** *Stipulis superioribus petiolo sublongioribus, floribus umbellato-capitatis cærulescentibus.*

5. B. *tenuifolia* (Eckl. et Zeyh! Enum. p. 196) adpresse sericea, foliolis anguste cuneatis linearibusve, bracteis subconformibus, floribus subumbellato-capitatis, petalis villosis, vexillo alas carinamque paullo excedente.—*Aspalathus pulchella*, E. Mey.! Comm. p. 38 (forma foliolis bracteisque brevioribus latioribus).—Foliola in forma normali 3–4 lin. longa, in planta Dregeana fere B. *multifloræ.* Stipulæ inferiores parvæ. Capitula pedunculata 4–6-flora, bracteis totidem quasi verticillatis suffulta. Flores magnitudine B. *multifloræ.*

Mountains to the north east of Cape Colony; near Silo on the Kliplaat river, *Ecklon and Zeyher*; on the Katberg and Stromberg, *Drège!*

6. B. *trichodes* (Presl. Bot. Bem. p. 47), piloso-hirta, subse-

ricea, foliolis lineari-cuneatis acuminatis, bracteis lanceolatis calycem æquantibus, floribus umbellato-capitatis, petalis villosis, vexillo alas carinamque paullo excedente.—*Aspalathus trichodes*, E. Mey.! Comm. p. 38.—Caulis diffusus, ramulis brevibus erectis. Pili longi, laxi, patentes. Foliola circa 3 lin. longa. Umbellæ 4–8-floræ. Calyces 3 lin. longi, supra ad basin gibbi. Vexillum calyce dimidio longius.

Summit of the Katberg, *Drège!*

*** *Stipulis inconspicuis.*

7. B. *viminea* (Presl. Bot. Bem. p. 47), sericeo-pilosa, caulibus simplicibus virgatis, foliolis oblongo-cuneatis mucronatis, bracteis subconformibus, floribus terminalibus spicatis v. lateralibus glomeratis.—*Aspalathus viminea*, E. Mey.! Comm. p. 38.—Caules e basi perenni 1–2-pedales. Petioli brevissimi. Foliola 4–6 lin. longa. Flores magnitudine B. *multifloræ*.

Cafferland, between the rivers Omsamcaba and Omsamwubo, *Drège.!*

The B. *teretifolia* of Eckl. and Zeyh., is a true *Aspalathus*, both in foliage and flowers, and the same as A. *armata*.

XXIX. Aspalathus, Linn.—*Sarcophyllum, Thunb.*—*Sarcocalyx, Walp.*—*Acropodium, Desv.*—*Pachyraphea, Plagiostigma, Streptosema, Psilolepus, Paraspalathus, Trineuria* et *Heterolathus, Presl.*

This extensive genus, entirely confined to Southern Africa, and almost to the Cape Colony, is very natural, and one of the most readily recognised among *Genisteæ*, especially if circumscribed as here proposed, that is, excluding the petiolate species separated by Ecklon and Zeyher, under the name of *Buchenrædera*, and recalling the *Sarcophyllum* of Thunberg, again established by Vogel, under the name of *Sarcocalyx*. The generic character, indeed, is not easy to define with precision, without taking into account the peculiar foliage, the entire absence of all petiole, notwithstanding an apparently compound leaf; yet in most cases the form of the pod and of the flower are more or less different from those of all other *Genisteæ*, as will appear from the following review of the principal modifications observable in the several species.

The calyx has its five teeth or divisions sometimes nearly equal and regular, more frequently the two upper are rather shorter and broader, and the lower one longer than the two lateral ones, and these are never combined with the lower one into an under lip, as in *Cytisus*, *Genista*, *Argyrolobium*, &c., nor yet arranged with the upper ones into lateral pairs, as in *Lotononis*, some *Crotalariæ*, &c., the lowest is in a few species much enlarged, and foliaceous. The petals vary in proportion, the standard usually supported on a short or very short claw is bent back immediately above that claw, keeled on the back, and never laterally reflexed; callosities or tufts of hair are often found on the inside near the claw, but are very different in different species, and in many are wholly wanting. The wings are narrow, on longer claws than the standard, with the transverse folds less apparent than in other *Genisteæ*, they are either free or (in the *Synpetalæ*) cohere by their claws to the keel and staminal tube, or to the keel only (in some *Leptanthæ*) just above the claw, without, however, the intervention of any appendage either inside the wing, as in *Ononis*, or outside the keel, as in *Indigofera*. The keel is rarely straight, often much arched or lengthened into a semicircular beak; its two petals, borne on still longer claws than the wings, are connected along the back nearly from the claws to the apex. The staminal tube is always open on the upper edge. The ovary sessile or rarely stalked, laterally compressed, the outer or carinal edge nearly straight, the axile or upper edge convex or angular near the base, the upper end more or less tapering. The ovules are generally two, four, six, or eight, and these numbers tolerably constant in each species, or if an odd one is added it is accidental, and the odd ovule often small and imperfect. In one species only (A. *vulnerans*) have I seen three ovules in all the flowers I have examined, and in two species (A. *filicaulis* and *macrocarpa*), they are very numerous (from twenty to thirty). The insertion of the ovules is variable, sometimes they are opposite, or nearly so, in pairs, sometimes alternate and equidistant,* crowded together near the base, or in the middle of the cavity, or disposed along the greater part of its length. The style is filiform and curved, always smooth, and in many species more or less thickened and cartilaginous a little above the ovary. The stigmatic gland either terminal and subcapitate, as in most *Genisteæ,* or more or less oblique or decurrent along the upper or outer edge of the style.

---

* That is to say, according to the phraseology of some writers, *biseriate*, or *uniseriate*, although in fact in all *Leguminosæ*, where there are more ovules than one,

The pod is (in almost all species) peculiar to the genus. More or less laterally compressed, the lower suture is either straight or curved, or convex *above the middle,* and the upper suture is always convex or angled *below the middle,* so that when the upper end is straight and tapering, the form of the pod is semi-lanceolate or semi-ovate, where the extremity turns upwards and the pod is shortened it becomes more or less rhomboidal. The obliquity is constant, even in the *Macrocarpæ,* where the pod is almost linear like that of *Lebeckia,* and in the *Leptanthæ,* where it is short and ovate almost like that of *Amphithalea.* In the *Pachycarpæ* and *Laterales,* it is very thick, in A. *pachyloba,* almost fleshy; its general consistence is coriaceous, the surface is smooth or hairy; in some *Pachycarpæ* it is woody.

The leaves of *Aspalathi,* sometimes heathlike, cylindrical, or three angled, sometimes flat or concave and coriaceous, with one or three longitudinal nerves, are always entire on the margin and sessile without the intervention of any articulated support, and in this they are analogous to those of the simple leaved *Crotalariæ* and *Lupines,* which have been considered as phyllodineous. But in *Aspalathus* they are generally arranged three together,* on a slight callosity of the stem, thus resembling the folioles of the compound-leaved *Genisteæ,* the callosity representing an abortive petiole. In the axilla there are frequently a number of additional similar leaves, proceeding from an abortive branch, and forming with the external ones, the characteristic fascicle of the genus. In

---

they are biseriate, but the two placentæ being apparently combined, the ovules always appear uniseriate, unless they are near enough together to overlap each other.

* It is often said that they are three or five together, or fascicled, but whenever there are more than three in the fascicle, I have always found the additional ones inside, and only three or one outside.

a few species the outer leaf of the fascicle is single, or even solitary, without the developement of any axillary fascicle, or accompanied by smaller and somewhat dissimilar lateral leaves, giving the appearance of a simple leaf with foliaceous stipules. In others, again, the leaves of the fascicle are so numerous and crowded, that it is difficult to make out any arrangement, and no accidental deviation or monstrosity has been observed to settle which of the above explanations is the true one. For where the supporting callosity is developed in the form of a thorn (as in A. *aculeata*, where it is as long as the leaves), it does not assist in the inquiry, as in that case the central outer-leaf is *inside* the thorn at its base, and the two lateral ones on each side. In the floral leaves the three are often united into one broad, several-nerved bract, but that might be the case on the supposition of the three being a leaf and two stipules, or three folioles, for it is far more frequently the case in *Leguminosæ*, that the bracts are formed by stipules, than by the main leaves. Although, therefore, the probabilities are that the callosity is the abortive petiole, and the one or three leaves are, in fact, folioles, yet as there is nothing to prove that it is so, I have preferred the designating them as leaves in my diagnoses, to making use of the somewhat more complicated phraseology consequent on calling them folioles, as is done by some modern writers.

The inflorescence is that of the tribe of *Genisteæ*, a terminal raceme; but in *Aspalathus* it is often contracted into a head, or reduced to a single flower, and from the peculiar abortion of the lateral flowering branches in some species, the flowers or racemes appear to be, and have been described as, axillary. And this would be correct if the reduced flowering branch bore no leaves, and the inflorescence proceeded immediately from the axil of the one or three leaves, but I have, on the contrary, always seen it spring from the centre of a fascicle. To avoid the repetition of an explanatory circumlocution, I have always called the flower *lateral* where it proceeds from the centre of a fascicle, without any developement of the axis, and *terminal*, where the callosity bearing the leaves and flower is more or less elongated into a real branch.

In the raceme each pedicel generally proceeds from the axilla of a bract, and bears, close to the calyx, two opposite bracteolæ. Both bract and bracteolæ are sometimes very different from the stem-leaves, either resembling single leaves, or evidently formed by the combination of three, or even consisting of three distinct leaves or folioles. These differences are usually constant in each species, but in some, as in *A. nigra*, the bracts are remarkably variable.

From these observations it will be perceived that I do not propose the adoption of the nine genera into which Presl, in his *Botanische Bemerkungen*, has distributed such *Aspalathi* as he was acquainted with. At first sight he appeared to me to have made use of some of the very numerous characters afforded by the genus, to form groups, not unnatural, which I hoped to have availed myself of, at least as sections. But upon a detailed examination of species, I found that they so frequently had not the characters assigned to them, and that most of these characters, although constant in species, were so uncertain in natural groups, that I not only could not adopt Presl's genera, but was obliged to give up all idea of establishing positive sections. The species will, therefore, be found here distributed into groups as natural as I could make them, established upon characters not always, perhaps, as definite as could be wished, but which it is hoped a little familiarity with the genus will enable the botanist to appreciate, and at any rate will be less liable to lead him astray than positive characters which do not exist.

As, however, the author of the *Botanische Bemerkungen* is understood to have devoted much attention to the *Leguminosæ*, and as he has relied much upon characters for the importance of which he quotes amongst others my own authority, it may be necessary to refer more in detail to some of them, as well as to the several genera he founds upon them.

A character upon which he lays much stress is the nervation of the calyx, which, as he observes, has been used for generic distinction in *Cruciferæ*, *Labiatæ*, *Piperaceæ*, &c., and he adds "quod in his ordinibus ad distinguenda genera valet, etiam in *Legumi-*

nosis valere potest et debet." But that is not at all a necessary consequence. It is now generally admitted that a very constant and important character in one order may be most variable, and therefore useless, in another. And in the present instance, the supposed differences in the number of nerves of the calycine teeth or divisions are fallacious. The calyx of *Leguminosæ*, as well as of *Labiatæ*, appears to be formed in general of five three-nerved leaves, and by the combination of the lateral nerves of adjoining leaves, or by their apparent evanescence, the total number of fifteen nerves of the whole calyx is often reduced to ten, or to five, or to some intermediate number (as for instance thirteen in most *Labiatæ-Satureineæ*). Wherever these differences are owing to the complete combination or separation of the lateral nerves from the base of the tube, and when the whole of the nerves are of nearly equal thickness (as in the thirteen-nerved *Satureineæ* and the fifteen-nerved *Nepeteæ*), they have been found to be tolerably constant, indicative of modifications in the general symmetry of other parts of the flower, and accompaned by differences in habit and therefore important. But where the mid-rib of each leaf is prominent, and the lateral ones faint, the modifications of the latter are not only more vague and inconstant, but apparently of little or no consequence. Thus in *Aspalathus* the lateral nerves of each calycine leaf are almost always combined with those of the adjoining ones at the base of the tube (distinct only in a very few species, where they are faint and irregular) into one, which is usually forked near the top of the tube, and these forks run along the margin of the teeth. They are very prominent when the teeth are broad and foliaceous; scarcely perceptible to the naked eye, where the calyx is thick or fleshy; and confounded with the central nerve into one mass, where the teeth are slender; or concealed from the casual observer where the calyx is downy; but with care they may be traced in almost all *Aspalathi*, at least at the base of the teeth, and are very distinctly visible in many of the so-called *laciniæ uninerves*. The prominence of these lateral nerves is, indeed, in some cases a good specific character, and even is in some groups more frequent than in others, but cannot be made use of as a generic or sectional distinction without separating closely allied species, and rendering the place of many others doubtful.

Another character to which Presl assigns great importance, the form of the pod, would appear at first sight to be an excellent one, for amongst the several modifications already alluded to, it may be difficult to conceive that those of A. *macrocarpa*, A. *pachyloba*, A. *spinosa*, and A. *nigra*, for instance, could all belong to one genus. But, although the fruits of many species are as yet unknown, those which have been observed are sufficient to show so gradual a transition from one of these extremes to another, and so little correspondence in most cases with general habit, that we are forced to give up the idea of dividing the genus according to this character, although certain forms are generally indicative of particular groups, and assist in the arrangement of the species.

The great mass of species are distributed by Presl into two genera, *Aspalathus* and *Paraspalathus*, distinguished from the rest by the absence of those peculiar characters on which the smaller genera are founded, and from each other chiefly by the pod which, in *Aspalathus*, is said to be "stipitatum cultriforme compressum 1–2–3-spermum calyce multoties longius sutura dorsali tenui acutaque;" in *Paraspalathus* "calyce brevius aut æquilongum sessile ellipticum utrinque acutum compressum monospermum." In this division he had in view probably the pod of A. *spinosa*, *suffruticosa*, &c., in the first instance, and that of A. *nigra*, and others of my *Leptanthæ*, in the second, and in each case these respective types run through a considerable number of species, but scarcely belong to two-thirds of those to which they are attributed, and if the descriptions above quoted be interpreted strictly, they would apply to but very few indeed. The "*stylus rectus*," also much relied upon in the character of *Paraspalathus*, appears to me to be purely imaginary, as I have seen it invariably very much curved in all *Aspalathi*. I cannot either confirm the supposed distinction in the number of ovules, said to be three in *Aspalathus*, two in *Paraspalathus*. I find it to be in both cases two in the majority of species, four, six, or eight in others, and in A. *filicaulis* (referred to *Paraspalathus*) above twenty.

Pachyraphea contains but two species distinguished by the short, thick pod, which, however, passes gradually into the longer one of others of my *Pachycarpæ*. The other characters given are either imaginary, or common to species referred to other genera.

Cyphocalyx is established for the A. *arida* (one of my *Carnosæ*), in which the two upper secondary nerves of the calyx are united in a thickish, somewhat fleshy, dorsal rib. But this is more or less the case in most of my *Carnosæ*, without ceasing decidedly with any particular species. Moreover, if the group were really to be considered as a distinct genus, there are already two older names published for it:—*Sarcophyllum* of Thunberg, and *Sarcocalyx* of Vogel.

Plagiostigma, consisting of the single A. *pinea*, is so near to the two species referred to *Pachyraphea*, that the differences cannot be considered as of more than specific importance.

Streptosema, with only two or rather three species, is characterized by the form of the keel and pods, which are, however, common to others not included; by the very oblique stigmatic surface which exists in one only of two species, so much alike in every other respect, as to be usually considered as mere varieties, and by a supposed resupination of the flower which I cannot see in these or any other *Aspalathi*.

Psilolepus contains two or three of my *Pedunculares*, which have certainly a peculiar habit, but unfortunately no common characters of any importance. The peculiar extra-axillary inflorescence relied upon, is owing to an irregular developement of the flowering branches, and not constant even upon the same individual, the long stipes of the pod exists only in one of the species, and if considered sufficient to establish a genus, Desvaux's name of *Acropodium* should be adopted, and the other characters are common to several other groups.

In *Trineuria*, Presl has nearly hit upon a very distinct group which alone might claim to be of generic importance, were the habit more different. It would, however, require the exclusion of A. *marginalis, linarifolia,* and *nigra, E. Mey.*, and the addition of A. *araneosa,* with considerable alteration in the character assigned. The group would then correspond to my *Synpetalæ,* remarkable for the adherence of the claws of the wings and keel to the staminal tube, a character which appears to have escaped Dr. Presl. On the other hand, he relies upon the three-nerved divisions of the calyx, which has already been shown to be a fallacious distinction, and in one species, A. *marginalis,* he has mistaken the reflexed margins of these divisions for lateral nerves. He describes also the wings as equal to or longer than the keel, whereas in the whole group they are constantly shorter. The habit of these *Synpetalæ* is, however, so exactly that of many other *Aspalathi,* that I have not considered them as entitled to rank any higher as a group than any of the others.

Lastly, *Heterolathus* has a positive and appreciable character, the irregular enlargement of the lower division of the calyx. But the species are otherwise so closely allied, in every respect, to the *Cephalanthæ,* that they can scarcely be considered in any other light than as forming an artificial subdivision of that group.

I now proceed to state, shortly, the principal characters of the groups into which it is now proposed to distribute the numerous species, forewarning, however, that for brevity's sake it is necessary here to state them in a form, rather too absolute, neglecting minor anomalies in groups founded on a variety of characters. Further details will be found at the head of each group.

I. Cephalanthæ. Folia terna v. vix fasciculata, plana, coriacea, glabra v. villosa nec sericea. Flores terminales, sessiles v. breviter pedicellati. Legumen vulgo oblique ovatum calyce brevius, rarius lanceolatum exsertum erectum.

§ 1. *Calycis lacinia inferior maxima ; flores capitati,* sp. 1–4. § 2. *Calycis laciniæ subæquales ; flores capitati v. 2–3-ni.* sp. 5–19. § 3. *Calycis laciniæ subæquales ; inflorescentia laxior,* sp. 20–22.

II. Sericeæ. Folia inferiora v. omnia fasciculata v. rarius terna, plana, sericea v. molliter villosa. Flores sessiles v. breviter

pedicellati. Legumen oblique ovatum calyce brevius, v. acuminatum paullo longius.

§ 1. *Callo sub foliis vix conspicuo, floribus terminalibus in capitulo v. spica vulgo numerosis,* sp. 23–32. § 2. *Callo sub foliis prominente sæpe aculeato, floribus terminalibus in capitulo paucis v. lateralibus solitariis,* sp. 33–38.

III. Synpetalæ. Folia fasciculata, teretia trigona v. carinata. Flores subsessiles. Ungues carinæ alarumque ea breviorum tubo stamineo adnati. Legumen oblique ovatum calyce brevius v. paullo longius.

§ 1. *Floribus capitatis,* sp. 39–44. § 2. *Floribus terminalibus lateralibusve solitariis v. geminis,* sp. 45–49.

IV. Leptanthæ. Folia fasciculata, teretia v. trigona. Flores subsessiles. Ungues carinæ alarumque a tubo stamineo liberi. Legumen oblique ovatum calyce brevius v. paullo longius.

§ 1. *Floribus capitatis v. spicatis,* sp. 50–54. § 2. *Floribus lateralibus v. interrupte spicatis,* sp. 55–62.

V. Laterales. Folia fasciculata, teretia v. trigona. Flores subsessiles laterales. Legumen ex ovario 2-3, ovulato villosum exsertum oblique ovatum v. lanceolatum vulgo turgidum, maturitate horizontaliter patens v. reflexum.

§ 1. *Foliis juniperinis rigidis patentibus mucronato-pungentibus raro muticis semipollicem raro excedentibus,* sp. 63–67. § 2. *Foliis vix pungentibus semipollice longioribus,* sp. 68–72. § 3. *Foliis non pungentibus raro 4 lin. excedentibus,* sp. 73–82. § 4. *Foliis densis tenuibus vulgo setaceis incurvis,* sp. 83–87. § 5. *Foliorum fasciculis aculeo longo subtensis,* sp. 88–89.

VI. Macrocarpæ. Folia fasciculata (v. terna plana?). Legumen ex ovario multiovulato lineari-lanceolatum, sp. 90–92.

VII. Grandifloræ. Folia fasciculata, teretia v. trigona. Flores laterales v. subterminales solitarii v. gemini. Legumen ex ovario pluriovulato crassum lato-lanceolatum, sp. 93–98.

VIII. Pachycarpæ. Folia fasciculata tereti trigona v. lineari-carinata. Flores terminales subcapitati magni. Legumen ex ovario pluriovulato crassum oblique lato-lanceolatum v. ovato-rhombeum villosum, sp. 99–101.

IX. CARNOSÆ. Folia fasciculata (rarius terna), teretia v. trigona vulgo carnosa. Flores (mediocres v. majusculi) sessiles v. breviter pedicellati. Calyx subcarnosus. Petala sæpius glabra. Legumen glabrum oblique lanceolatum v. acutum sæpius exsertum.

§ 1. *Floribus spicatis v. capitatis, foliis submuticis,* sp. 102–108. § 2. *Floribus capitatis solitariisve, foliis mucronato-pungentibus,* sp. 109-115. § 3. *Floribus solitariis plerumque lateralibus, foliis muticis,* sp. 116–118.

X. PINGUES. Folia fasciculata, teretia v. trigona. Flores (parvi) laterales solitarii sessiles v. breviter pedicellati. Petala glabra v. rarius sericea. Legumen glabrum v. sericeum vix turgidum exsertum oblique lanceolatum.

§ 1 *Inermes ovulis* 4–6, sp. 119–125. § 2. *Inermes ovulis* 2, sp. 126–133. § 3. *Spinescentes,* sp. 134–136.

XI. TERMINALES. Folia fasciculata teretia v. trigona (rarius solitaria v. terna) non carnosa. Flores (parvi v. mediocres) ad apices ramulorum solitarii gemini v. racemulosi. Petala sericea v. glabra. Calyx turbinatus v. rarius latiuscule campanulatus. Legumen oblique lanceolatum glabrum v. sericeum vix turgidum.

§ 1. *Foliis fasciculatis glaberrimis, floribus ad apices ramulorum brevium v. vix evolutorum solitariis subgeminisve,* sp. 137–138. § 2. *Foliis fasciculatis glabris sericeisve, floribus intra folia summa sessilibus solitariis geminisve,* sp. 139–144. § 3. *Foliis fasciculatis glabris puberulisve, floribus ad apices ramulorum pedicellatis* 2-3-*nis v. breviter racemulosis, ramulis sæpe spinescentibus,* sp. 145–153. § 4. *Foliis fasciculatis ternisve incano-sericeis, floribus in racemo v. spica terminali subsessilibus,* sp. 154–155. § 5. *Foliis solitariis v. subfasciculatis glabriusculis, racemis irregulariter pauci-floris,* sp. 156–157.

XII. PEDUNCULARES. Folia terna v. fasciculata, lineari-subulata v. plana. Flores ad apicem pedunculi elongati capillaris solitarii v. pauci.

§ 1. *Foliis ternis v. subfasciculatis, pedunculis terminalibus ramealibus vel rarius lateralibus, ovario pluriovulato,* sp. 158–163.

§ 2. *Foliis fasciculatis, pedunculis e fasciculo foliorum ortis, ovario biovulato.* sp. 164-165.

SERIES I. CEPHALANTHÆ. Folia terna v. ad axillas vix fasciculata, plana v. concaviuscula, lateralia sæpe incurva v. undulata v. falcato-recurva, omnia coriacea, glabra pubescentia v. villosa nec sericea. Flores majusculi v. mediocres, sessiles v. breviter pedicellati, ad apices ramulorum gemini v. sæpius plures, capitulo vulgo foliis summis involucrato. Vexillum in omnibus, carina in plerisque pubescentia v. villosa. Ovula 2-6. Legumen (ubi notum) oblique ovatum v. ovato-lanceolatum, calyce brevius v. rarius exsertum et suberectum, pubescens v. villosum.

§ 1 *Calycis lacinia inferior major cymbæformis. Flores capitati.*—Heterolathus, *Presl. Bot. Bem. p.* 131.

1. A. *undulata* (Eckl. et Zeyh.! Enum. p. 199) foliis oblongis utrinque acutis undulatis subcomplicatis glabris ciliatisve, floralibus orbiculatis acutis flores superantibus, calycis pilosi laciniis superioribus lineari-lanceolatis infimaque majore cymbæformi tubo 2–3-plo longioribus, vexillo pubescente carina glabra longiore, ovario 4-ovulato glabro, legumine oblique lanceolato obtuso.—A. *involucrata,* E. Mey.! Comm. p. 38.—*Ononis fasciculata.*—Thunb. Fl. Cap. p. 589.—Frutex rigidus, ramosissimus. Folia crebra, terna, 4–5 lin. longa, reticulato-pennivenia; floralia vulgo solitaria, multinervia, latiora quam longa (ex tribus in unum coalitis composita, rarius terna, angusta, a basi soluta) margine ciliata, flavicantia. Calyx 4 lin. longus. Bracteolæ lineares, calycem subæquantes. Flores lutescentes.

Hills near Winterhoek, in Worcester district, *Ecklon and Zeyher! Drège!*

2. A. *suaveolens* (Eckl. et Zeyh.! Enum. p. 199) pilis longis hirsuta, foliis lineari-lanceolatis acutissimis basi angustatis venosis, floralibus obovatis acutis flores æquantibus, calycis pilosuli laciniis 4 anguste lanceolatis acutis tubo triplo longioribus infima cymbæformi majore, vexillo pubescente calycem æquante carinam glabram paullo superante, ovario villosulo 5–6-ovulato.—Fruticulus debilis. Folia 4–6 lin. longa, reticulato-pennivenia; floralia viridia v. purpurascentia, pilis longis hispida. Capitula et flores quam in A. *undulata* minores.

Hills near Winterhoek, in Worcester district, *Ecklon and Zeyher!*

3. A. *venosa* (E. Mey.! Comm. p. 39) ramulis villosis, foliis obovato-lanceolatis mucronato-pungentibus rigidis villosis v. demum glabratis, floralibus calyce brevioribus, calycis hirsuti laciniis 4 lanceolatis tubo æquilongis infima majore cymbæformi, vexillo sericeo-villoso carinam villosam calycemque superante, alis carina paullo brevioribus, ovario biovulato.—Frutex rigidus, divaricato-ramosus, paucifoliatus. Folia 4 lin. longa, coriacea, nitida, venis obscuris; lateralia recurvo-falcata; floralia caulinis vulgo multo breviora et tenuiora. Calyces 3½ lin. longi, dense villosi. Bracteolæ oblongæ.

On the Giftberg (Cederbergen), among rocks, *Drège!*

4. A. *polycephala* (E. Mey.! Comm. p. 39), hirsuta, foliis ovatis obovatis oblongisve acutis recurvo-mucronatis, floralibus calyce subbrevioribus, calycis hirsuti laciniis 4 lanceolatis acutis tubo subtriplo longioribus, infima obovato-cymbæformi, vexillo villoso calycem æquante carinam villosam superante, alis minimis, ovario hirsuto biovulato.—Fruticulus divaricato-ramosus. Folia recurvo-patentia, sæpe fasciculata, 1–3 lin. longa, venosa, hirsutie sæpe canescentia. Calyx (lacinia inferiore inclusa) 5 lin. longa. Corolla lutea.

On the Cederbergen, in rocky situations, *Drège!*

§ 2. *Calycis laciniæ subæquales. Flores capitati, rarius gemini.*

5. A. *orbiculata,* sp. n., ramulis tomentosis, foliis orbiculato-spathulatis crassis concavis glabris, floribus capitatis, calycis villosi laciniis lanceolatis acutis tubo subæquilongis, petalis pubescentibus, vexillo orbiculato carinam vix superante, ovario pubescente 8-ovulato.—Frutex rigidus. Folia 3–4 lin. longa et sæpe longitudine sua latiora, basi 1–3-nervia et in petiolum brevissimum contracta, nitida. Calyces 2–2½ lin. longi, hirsutie parca pube brevi intermixta sæpe rufescente. Vexillum calyce subduplo longius, ungue longiusculo. Flores flavi videntur.

From *Scholl's* collection without the precise locality:—the foliage of this species is much like that of the broader leaved

forms of A. *securifolia,* but the flowers are larger and more hairy, the vexillum and calycine segments broader, and the ovules in all the flowers I have examined, eight in number, instead of four or five.

6. A. *securifolia* (Eckl. Zeyh.! Enum. p. 190), ramulis tomentosis, foliis obovatis orbiculatis suboblongisve crassis concavis lateralibus obliquis utrinque acutis glabris ciliatisve, floribus capitatis, calycis glabri v. villosuli laciniis lanceolato-subulatis acutis tubum vix æquantibus, petalis puberulis, vexillo late ovato carinam breviter superante, ovario 4– (rarius. 5–) ovulato villoso, legumine oblique ovato.—β. *spathulata,* foliis latioribus, calycibus majoribus villosulis.—A. *spathulata,* Eckl. Zeyh. ! Enum. p. 198.—Folia 4–6 lin. longa, in forma normali 2–3 lin. lata, in var. β. sæpe 4 lin. lata, basi in petiolum brevem angustata. Vexilli stipes brevissisimus.

Rocky hills on the Zondereinde river, Swellendam district, *Ecklon* and *Zeyher !* The var. β. on the Babylonstoorens hill, *Ecklon* and *Zeyher. ! Mundt.*

7. A. *conferta,* sp. n., ramis tomentosis, foliis cuneato- v. subspathulato-oblongis obtusis v. mucronato-acutis demum glabris nitidulis, floribus capitatis, bracteis setaceis, calycis vix villosuli laciniis lanceolato-subulatis acutis tubo longioribus, petalis puberulis, vexillo lato-ovato carinam breviter superante, ovario 4-ovulato villoso, legumine oblique ovato acuminato.—Forte A. *recurvifoliæ* varietas, sed differt imprimis foliis multo angustioribus minus coriaceis plerisque semipollicaribus vix 2 lin. latis. Calycis laciniæ multo longiores.

On the Zwarteberg, near Caledon, amongst stones, *Mundt. !* also in *Bowie's* collection, and *Burchell's* Cat. Geogr. n. 6956 !

A. *truncata,* of Ecklon and Zeyh. ! Enum. p. 197, from near Tulbagh, n. 425 ! of Zeyher's separate collection from Riet Kuil, in Swellendam, and n. 1220 ! of Drège's collection from Nieuwekloof, are all *Aspalathi* deformed by the prick of some insect. Drège (Linnæa v. 19) refers them to the two varieties of A. *securifolia,* to me they appear, at least the two latter, to belong rather

to the A. *conferta*, but the form of the leaves is so altered by the disease, that it is impossible, from my specimens, to determine the point with certainty.

8. A. *myrtillæfolia*, sp. n., ramulis vix villosulis, foliis brevibus obovatis mucronatis subplanis immarginatis glabris, floribus paucis subcapitatis, calycis glabri laciniis lanceolatis acutissimis tubo lato longioribus, petalis puberulis, ovario glabro biovulato.—Fruticulus ramosissimus, habitu A. *exiguæ* subsimilis. Folia conferta 2 v. rarius 3 lin. longa, 1½ lin. lata, tenuiter coriacea, 1–3-nervia. Flores magnitudine eorum A. *recurvifoliæ*, ad apices ramorum per 3–6 breviter pedicellati. Calycis lacinia inferior 2 lin. longa, superiores paullo minores, tubus 1 lin. longus.

Cape Colony, *Bowie !*

9. A. *exigua* (Eckl. Zeyh. Enum. p. 198) foliis confertis obovatis v. obovato-oblongis acutis vix mucronulatis coriaceis marginatis glabris supra concaviusculis, lateralibus obliquis, floribus paucis subcapitatis, calycis adpresse puberuli laciniis subulatis tubo subæquilongis, petalis sericeis, ovario villoso biovulato.—Fruticulus humilis, ramis incano-tomentosiusculis. Fōlia 2–3 lin. rarius 4 lin. longa, 1–2 rarius 3 lin. lata, 1–3-nervia. Flores 3–6, fere sessiles, iis A. *securifoliæ* minores.

Hills on the Zondereinde river, Swellendam district, *Ecklon* and *Zeyher*; on the Babylonstoorens hill, *Zeyher*, n. 2346 !

10. A. *inops* (Eckl. Zeyh. Enum. p. 197), from the same localities as A. *exigua*, is unknown to me, but, from the character given, it can scarcely differ from that species.

11. A. *capitella* (Burch ! Cat. Geogr. n. 7148), ramulis tenuibus puberulis, foliis cuneato-oblongis acutis rigidis hirtellis, floribus subgeminis sessilibus, bracteis minimis, calycis hirsuti laciniis subulatis tubo subæquilongis, petalis sericeis, ovario puberulo biovulato, legumine oblique ovato.—A. *stellari* affinis sed multo gracilior et minor. Folia ternata, rarius gemina, secus ramulos distantia, 2 v. rarius 3 lin. longa. Flores in specimine omnes gemini. Calycis tubus lineam longus.

Cape Colony, *Burchell !*

β. *glabrescens*, ? ramis tortuosis, foliis plerisque fasciculatis.

Forte species distincta. An A. *inops*, Eckl. et Zeyh.? sed flores ut in A. *capitella* gemini v. solitarii, nec unquam 3–5-nos vidi.

Subalpine scrub near Kochmanskloof, Swellendam district, *Mundt*.

12. A. *stenophylla* (Eckl. Zeyh. Enum. p. 197), foliis linearibus mucronatis utrinque acutis incurvis carinato-concavis demum glabratis rigidis, floribus capitatis, calycis villosi laciniis subulatis tubo sublongioribus, petalis extus sericeo-pubescentibus, ovario villoso biovulato.—A. *canaliculata*, E. Mey.! Comm. p. 44.—Fruticulus vix pedalis, caule brevissimo e basi ramoso, cinerascente, glabro. Folia coriacea, 4–6 lin. longa, ½–1 lin. lata. Flores flavicantes.

Hills on the Zondereinde river, Swellendam district, *Ecklon* and *Zeyher;* Gnadenthal, in the same district, *Drège!* Perhaps a mere narrow-leaved form of A. *stellaris*.

13. A. *angustissima* (E. Mey. Comm. p. 44), from the Draakenstein hills, is unknown to me, but is placed next to, and is probably near the last.

14. A. *stellaris* (Eckl. Zeyh! Enum. p. 197), ramulis puberulis villosisve, foliis oblongo-lanceolatis lateralibus incurvis mucronatis vix pungentibus rigidis glabris v. laxe villosulis, floribus capitatis, bracteis subulatis, calycis hirsutissimi laciniis subulatis tubo æquilongis, petalis villosis, ovario villoso biovulato.—Folia 3–4, rarius 5 lin. longa, costa dorso prominente, venis inconspicuis. Capitula pilis longis hirsuta.

Hills of the Kannaland, near the Gauritz river in Swellendam district, Ecklon and Zeyher! also in *Bowie's* collection. In the Banksian herbarium this is marked by J. St. Hilaire as the A. *cytisoides*, Lam. The species which, in common with most others, I have described below as Lamarck's plant, has indeed much the habit of this one, but the inflorescence is much looser, and the lateral leaves curved downwards, not inwards.

15. A. *psoraleoides*, ramulis pubescentibus, foliis spathulato-lanceolatis mucronatis puberulis subtus convexis, lateralibus incurvis, floribus capitatis, bracteis obovato-rotundatis tridentatis, calycis pubescentis laciniis obovato-subrotundis obtusis tubo duplo

longioribus, corolla extus sericea, ovario biovulato villoso.—*Paraspalathus psoraleoides,* Presl. Bot. Bem. p. 134.

Cape Colony, *Ecklon* and *Zeyher, Sieber !* Possibly a deformed state of A. *stellaris,* analogous to those mentioned under A. *conferta.*

16. A. *fusca* (Thunb. Fl. Cap. p. 574), appears to be allied to some of the preceding species, but is very imperfectly described.

17. A. *Kraussiana* (Meissn ! Lond. Journ. Bot. ii. p. 69). This species, well described in the second volume of this journal, is closely allied to A. *anthylloides,* from which it differs in the more coriaceous and less hairy leaves; the upper ones distinctly three-nerved. In these respects it approaches A. *stellaris,* but the leaves and flowers are larger, and the general appearance much nearer that of A. *anthylloides.*

Besides *Krauss's* specimens from the Klein river, in Swellendam district, I have seen it in the collections of *Bowie ! Thom !* and *Nelson !*

18. A. *anthylloides* (Linn. Spec. p. 1002), ramulis villosis, foliis oblongo-lanceolatis acutis lateralibus obliquis hirsutis v. demum glabratis, floribus dense capitatis, bracteis lanceolato-subulatis, calycis villosi laciniis lanceolato-subulatis tubo longioribus, petalis sericeo-villosis, ovario villoso biovulato, legumine oblique ovato calyce breviore.—Folia pleraque semipollicaria, 2 lin. lata, vulgo pilis longis laxis villosa, costa parum prominente, venis inconspicuis, rectiora planiora et minus coriacea quam in plerisque affinibus. Capitula majuscula, foliis floralibus insigniter involucrata.

Probably common near Capeton and towards Caledon, as it occurs in many collections without precise stations. It is *Burchell's* n. 585 !—Berger's A. *anthylloides* (Pl. Cap. p. 211) is evidently a very different species, probably A. *procumbens.*

19. A. *linearifolia* (DC. Prod. 2. p. 142), ramulis molliter villosis, foliis linearibus sublanceolatisve utrinque acutis, floribus capitatis, calycis molliter villosi laciniis lanceolatis tubo plus duplo longioribus, vexillo pubescente carinam arcuatam apice pubes-

centem vix superante, ovario villoso 4-ovulato.—A. *linifolia,* E. Mey. Linnæa 7, p. 162.—Folia sæpe pollicaria, vix linea latiora. Capitula densa.

On the Berg river, Nieuwekloof, Dutoits Kloof, Tulbaghs Kloof, in Stellenbosch and Worcester districts, *Drège ! Ecklon and Zeyher,* and in various other collections. E. Meyer (Comm. p. 40) adopts Burman's spelling of the specific name *linarifolia,* which appears incorrect. It should be either as De Candolle has spelt it *linearifolia,* linear-leaved, or *linariæfolia,* with leaves of *Linaria.*

§ 3. *Calycis laciniæ subæquales. Inflorescentia laxior.*

20. A. *Plukenetiana* (Eckl. Zeyh. ! Enum. p. 200), ramulis canescenti-puberulis, foliis linearibus sublanceolatisve lateralibus incurvis acutis glabris v. canescenti-puberulis, floribus breviter subracemosis, calycis canescentis laciniis lanceolatis tubo subæquilongis, petalis sericeis, ovario pubescente 4–5-ovulato, legumine sericeo oblique ovato-lanceolato turgido calyce subtriplo longiore. —Folia plerumque semipollicaria, 1–1½ lin. lata, lateralia parum obliqua. Calyces 2 lin. longi. Bracteæ minutæ. Species hinc ad A. *linearifoliam* accedit, hinc ad A. *callosam,* quam vero ob flores glabros ad *Carnosas* amandavi,

Tulbagh valley, Worcester district, *Ecklon and Zeyher !* it is also n. 430 of *Zeyher's* separate sets, and occurs in *Thom's* collection.

21. A. *rugosa* (Thunb. Fl. Cap. p. 574) is unknown to me. E. Meyer suspects it to be his A. *venosa,* but the description does not agree, and seems to indicate an affinity to A. *Plukenetiana.*

22. A. *cytisoides* (Lam. Dict. 1. p. 392 ?) ramulis villosis, foliis oblongo-lanceolatis lateralibus recurvo-falcatis mucronato-pungentibus rigidis appresse villosis glabratisve, floribus subracemoso-capitatis, calycis villosi laciniis lanceolatis tubo sublongioribus, petalis villosis, ovario villoso 4-ovulato, legumine oblique oblongo calycem superante.—A. *cinerea,* Thunb. Fl. Cap. p. 575.—Folia 2–4 lin. longa, costa venisque nonnullis prominulis, lateralia recurva nec ut in A. *stellari* et affinibus incurva, nunc glabra

lætevirentia, nunc villis brevibus canescentia. Calyces 3 lin. longi.

β. decumbens, laxa, foliis majoribus, inflorescentia laxiore.

Tulbagh valley, *Ecklon and Zeyher!* Dutoitskloof, *Drège!* and in several other collections. The var. *β.* is from *Bowie!* From a memorandum of J. de St. Hilaire's, in the Banksian herbarium, Lamarck's name would rather apply to A. *stellaris;* but his description suits better the present species, not unlikely to be confounded with A. *stellaris,* but quite distinct both in foliage and inflorescence.

Series II. SERICEÆ. Folia plana, sæpius brevia, superiora terna, rarius solitaria, inferiora sæpius v. rarius omnia gemmarum evolutione fasciculata, sericea v. molliter villosa. Flores sessiles v. subsessiles, capitati, spicati v. solitarii, mediocres v. majusculi. Petala in omnibus villosa, longiuscule unguiculata. Legumen (ubi notum) oblique ovatum, acutum et calyce brevius v. rarius acuminatum calyce paullo longius, ex ovario villoso villosum v. sericeum.

§ 1. *Callis sub foliis vix conspicuis nec aculeatis, floribus in capitulo v. spica terminali numerosis v.* (in A. villosa) *paucis.*—Polyanthæ.

The species of this group, chiefly natives of the Cederbergen, are particularly difficult to distinguish, and run much into one another.

* *Ovario biovulato.*

23. A. *villosa* (Thunb. Fl. Cap. p. 574), foliis ternis subfasciculatisve parvis oblongis acutiusculis muticis sericeis, capitulis paucifloris, bracteis oblongo-linearibus, calycis sericei laciniis oblongis linearibusve tubo subæquilongis, legumine e basi obliqua ovato longe rostrato.—Caules lignosi sed tenues et debiles, ramulis filiformibus. Folia internodiis sæpius breviora, vix 2 lin. longa, corollæ 3½ lin.

Cederbergen, near Honigvalley, *Drège!* Bockland, *Thunberg.*

24. A. *sericea* (Berg. Pl. Cap. p. 212) foliis dense fasciculatis brevibus anguste oblongis subcuneatisve obtusis v. vix acutis

argenteo-sericeis, capitulis densis ovatis, calycis molliter villosi dentibus tubo multo brevioribus, petalis villosissimis subæquilongis, legumine ovato longe rostrato villoso.—Rami validi, rigidi, dense foliati. Folia 1–3 lin. longa, densius sericea quam in affinibus, tomento nunquam evanido. Capitula pollicem diametro. Flores 5–6 lin. longi, villosissimi.

Cederbergen, from various collections, near Ezelsbank and Giftberg, *Drège!* There is little doubt that this is Bergius's plant to which E. Meyer has referred it. In Linnæus's herbarium, it is one of the five species named A. *argentea*, and may be the A. *argentea* of Thunberg, though certainly not the one described under that name by Linnæus. The A. *sericea* of Linnæus's herbarium appears to be a *Lebeckia*, that of Ecklon and Zeyher is referred by Walpers to A. *jacobæa*. Our plant is often confounded with A. *æmula*, which often resembles it in foliage and habit, but has the flowers usually solitary or at most three together instead of being very numerously collected into compact heads.

25. A. *lotoides* (Thunb. ? Fl. Cap. p. 575) foliis ternis fasciculatisve parvis oblongis lanceolatisve acutis sericeo-puberulis glabratisve, capitulis densis ovato-globosis, bracteis inferioribus stipitatis ovato-lanceolatis summis subulatis, calycis villosi dentibus lanceolato-subulatis tubo æquilongis, vexillo alisque carina dimidio longioribus.—Rami erecti, elongati, rigidi, sed tenuiores quam in A. *virgata* et A. *sericea*. Folia 1–2 v. rarius 3 lin. longa, minora incano-sericea, majora sæpe glabrata. Capitula multiflora usque ad pollicem diametro. Flores 5–6 lin. longi.

Hab. Cederbergen, near Ezelsbank, *Drège!* also in *Bowie's* collection with rather narrower bracts. I have followed E. Meyer in considering this as Thunberg's A. *lotoides*, although his description is not decisive; and the two specimens so named in Linnæus's herbarium are very different, the one being A. *jacobæa*, the other A. *cephalotes*. Our plant is very near A. *virgata*, with flowers as large as in A. *sericea*.

26. A. *leucocephala* (E. Mey.! Comm. p. 41) foliis subternis fasciculatisve parvis oblongis acutiusculis subsericeo-villosis, capitulis densis globosis, bracteis stipitatis orbiculatis obovatis

oblongisque, calycis villosi dentibus subulatis plumosis tubo æquilongis et corollam æquantibus, vexillo carinam vix superante.

On the Giftberg (Cederbergen), *Drège*! Scarcely differing from some forms of A. *virgata* but in the smaller corolla.

27. A. *virgata* (Thunb. Fl. Cap. p. 576) foliis ternis fasciculatisve parvis oblongis linearibusve acutis sericeis, capitulis oblongis densis, bracteis orbiculatis v. ovatis, calycis villosi laciniis tubo æquilongis, petalis calyce longioribus carina vix cæteris breviore, legumine ovato-turgido acuminato.—A. *elongata*, Eckl. Zeyh.! Enum. p. 202.—A. *Scholliana*, Presl.? Bot. Bem. p. 135.—Rami numerosi, rigidi, virgati. Folia pleraque 1–2 lin. longa lateralibus intermedio minoribus, v. in ramulis vegetioribus 3 lin. longa et interdum solitaria. Capitula pleraque pollicem longa, semipollicem crassa, floribus dense imbricatis molliter villosis. Calycis dentes subplumosi, corolla paullo breviores.

In sandy stony situations in Tulbagh valley, *Ecklon and Zeyher*! near Jackall's river, and Piquetberg, *Drège*! also n. 424 of *Zeyher*! n. 6323 of *Burchell*! and in *Wallich's* and other collections. Ecklon's synonym is referred by Walpers to A. *adscendens*, but his description agrees with my specimen, which is certainly the present species.

β.? *globosa*, capitulis exacte globosis v. etiam depressis.—A *quinquefolia*, Thunb.? Fl. Cap. p. 575 non Linn. fil.

This form, which is intermediate between A. *leucocephala* and A. *virgata*, is mixed with specimens of the latter in various collections, and induces me to think all may be mere varieties of one species.

28. A. *jacobæa* (E. Mey.! Comm. p. 41) foliis ternis fasciculatisque anguste oblongis lanceolatisve acutis subsericeo-pilosis, spicis oblongis densis, bracteis lanceolatis substipitatis, calycis pilosissimi laciniis lanceolato-subulatis corolla brevioribus, vexillo alisque carina triente longioribus.—A. *sericea*, Eckl. Zeyh. Enum. p. 202, teste Walp.—Caules decumbentes v. ascendentes (nec erecti ut a cl. Meyero descripti?) raro pede longiores, ramulis floriferis brevibus. Pubes laxa, pilis longiusculis vix sericeis. Folia pleraque 2 lin. longa. Spicæ 1–2 pollicares, laxiores quam

in A. *virgata,* mollissime pilosæ, floribus (teste E. Meyero) badiis.

Cape Flats and neighbouring hills, from various collectors. This plant is named A. *lotoides* in Linnæus's herbarium, but cannot well be Thunberg's species of that name. Bergius's specimens, distributed by the Berlin Museum under the name of A. *jacobæa,* belong to A. *procumbens,* a species often resembling it in habit, but readily distinguished by the looser inflorescence, and by the number of ovules.

29. A. *adscendens* (E. Mey.! Comm. p. 41) foliis fasciculatis ternisve oblongis obtusiusculis subsericeo-pubentibus, spicis demum elongatis dissitifloris, bracteis orbiculatis v. ovatis acutis, calycis villosi dentibus lanceolatis tubo brevioribus, vexillo carinam triente superante.—A. *virgata,* Eckl. Zeyh.! Enum. p. 203 non Thunb. —A. *stricta,* Steud. Flora, 1830, p. 543 (si verbum "floribus racemosis" pro "floribus dissitis" accipiendum).—Caules elongati, adscendentes. Folia raro 2 lineas excedunt. Spicæ nunc pollicares floribus approximatis etsi distinctis, nunc pluripollicares floribus remotis, semper minus pilosæ quam in A. *jacobæa,* cæterum bracteis latis calyce brevioribus et dentibus calycinis hæc species facile ab illa distinguenda.

Cape district near Paarl, *Drège*! near Piquetberg, *Ecklon and Zeyher*; also n. 434 of *Zeyher's* separate collection.

* * *Ovario 4–8-ovulato.*

30. A. *procumbens* (E. Mey.; Linnæa, 7. p. 162) foliis ternis subfasciculatisve linearibus lanceolatisve acutis pilosis sericeisve, spicis laxiusculis v. demum elongatis dissitifloris, bracteis lanceolatis, calycis dentibus lanceolato-subulatis tubo subbrevioribus, vexillo carina triente longiore, ovario substipitato 6–8-ovulato.—A. *quinquefolia,* Linn. Spec. p. 1002 ex icone cit. Pluk. t. 278. f. 4. vix Thunb.—A. *anthylloides,* Berg. Fl. Cap. p. 211. ex descr. et speciminibus Bergianis a Mus. Reg. Berol. comm. sub nom. A. *jacobææ.*—A. *heterophylla,* Linn. fil.! Suppl. p. 321. an Thunb.?—Caules procumbentes, ramulis floriferis brevibus adscendentibus. Folia pleraque 3–4 lin. longa. Spicæ nunc breves

floribus approximatis at distinctis nec ut in A. *jacobæa* imbricatis, nunc 3–5-pollicares floribus dissitis v. remotis. Calyces 2 lin., flores 4 lin. longi, rubri?

Cape district, apparently common, as it occurs in most collections. I have for the present preserved E. Meyer's modern name in preference to either of the Linnæan ones until Thunberg's synonymy has been cleared up. I have little doubt it is the plant designated by Linnæus under the name of A. *quinquefolia*, although there is no specimen so named in his herbarium; but it does not agree with Thunberg's description, and the name itself is a bad one, as the leaves are either ternate or fasciculate, and not quinate. It is also certainly A. *heterophylla* of the younger Linnæus, but as he took up that name from Thunberg, and it is doubtful whether the latter botanist applies it to this or to the one designated below, I have thought it better not to transfer it till the doubt shall be cleared up.

31. A. *stachyera* (Eckl. Zeyh. Enum. p. 202) is said by Walpers only to differ from the A. *procumbens* by the divisions of the calyx almost surpassing the corolla. It is from the same locality, and unknown to me.

32. A. *heterophylla* (Thunb.? Fl. Cap. p. 575. E. Mey.! Comm. p. 40), foliis solitariis subternis fasciculatisque linearibus lanceolatisve acutis subsericeo-pilosis, spicis laxiusculis oblongis elongatisve, bracteis lineari-lanceolatis, calycis molliter pilosi laciniis tubo subæquilongis, petalis subæquilongis, ovario 4–5-ovulato.—*Ononis spicata*, Thunb.? Fl. Cap. p. 584.—A. *linifolia*, Steud.? Flora, 1830, p. 543.—Rami elongati virgati. Folia nunc 2 lin. longa, terna, subæqualia; nunc valde inæqualia medio lateralibus duplo longiore, nunc in ramulis floriferis solitaria, 4–6 lin. longa. Spica mollissima 1–3-pollicaris, ramulo demum, sæpe excurrente. Calyx 3 lin. longus, corolla 6 lin.

Cape Flats, *Drège*! *Wallich*! *Zeyher*, n. 435! and many other collections. Although difficult to distinguish from A. *procumbens* by positive characters, this is a much handsomer and larger species, usually more silky and with larger flowers. I have followed E. Meyer in considering it as the A. *heterophylla* of

Thunberg, although, as the A. *procumbens* is certainly the one so designated by Linnæus the son, it may have also been the one meant by Thunberg; and his description of *Ononis spicata* (which I noted on seeing his specimen to be an *Aspalathus*) agrees better with this species than with any other. In which case perhaps Steudel's name might be adopted for this one, although it only refers to an unusual form with more elongated leaves, and is liable to be confounded with the A. *linearifolia,* called by E. Meyer (Linnæa, v. 7) *linifolia.* In Linnæus's herbarium this is one of the species representing A. *argentea,* and from a MS. note of St. Hilaire's it is the one so called by Lamarck.

§ 2. *Calli sub foliis prominentes, sæpius in aculeam brevem integram v. trifidam abeunte, rarius in tota planta mutici. Flores sessiles, solitarii v. in capitulo pauci.*—Argenteæ.

* *Ovario* 4–8-*ovulato, callo rarius mutico.*

33. A. *tridentata* (Linn. Spec. p. 1002, non aliorum) foliis ternis fasciculatisve brevibus lanceolatis oblongis sublinearibusve acutis sericeis glabratisve, callo sub foliis sæpe aculeato, capitulis depresso-globosis, foliis involucrantibus bracteisve lato-lanceolatis acutis calyces subæquantibus, calycis villosissimi laciniis lanceolatis acutissimis tubo subæquilongis, carina alis multo breviore, ovario sub-6-ovulato.—A. *argentea,* var., E. Mey.! Comm. p. 43. A. *pilosa,* Eckl. Zeyh. Enum. p. 202 (fide Drège Linnæa v. 20).—Frutex ramosissimus, ramulis rigidis sed sæpius tenuibus. Aculei callorum nunc trifidi semilineares v. usque ad lineam longi, nunc breves simplices v. fere evanidi. Folia nunc canescentia 1–2 lin. longa, nunc imprimis ramulorum viridia 2–3 lin. imo 5–6 lin. longa. Capitula pluriflora, pilis longis molliter villosa.

Cederbergen, on the Giftberg, *Drège*! Tulbaghskloof, and Vogelvalley, *Zeyher, n.* 423! (at least some of his specimens) also in *Harvey's, Paterson's,* and other collections. The name of A. *tridentata* is usually given to the A. *ferruginea,* but Linnæus's phrase distinctly refers to the inflorescence as capitate. There is no specimen in his herbarium.

34. A. *argentea* (Linn. Spec. p. 1002? non herb.) foliis ternis fasciculatisve parvis obovatis oblongisve sericeis glabratisve, callo sub foliis aculeato, capitulis depresso-globosis paucifloris, foliis involucrantibus obovato-orbiculatis calyce multo brevioribus, calycis villosissimi laciniis lanceolatis tubo brevioribus, carina alis paullo breviore, ovario 5–8-ovulato.—A. *argentea* α. E. Mey.! Comm. p. 43.—A. *staurantha,* Eckl. Zeyh. Enum. p. 202.—Frutex divaricato-ramosissimus, ramulis tenuibus rigidis subrecurvis. Species precedenti (cum qua junxit E. Meyer) affinis, sed distincta videtur foliis magis sericeis et raro elongatis, capitulis minoribus sæpe 2–3-floris, villis florum magis sericeis et bracteis multo brevioribus fere orbiculatis.

Sandy hills of Cape district, *Drège*! Sands of the mouth of the Boschmanns river, *Zeyher*! n. 422, also *Burchell's* n. 7455! and in several other collections. Many species of this series have received by various authors the name of *argentea*; but E. Meyer is probably correct in considering this as the true one, although it is not in Linnæus's herbarium, where the name of *argentea* is given to the A. *sericea,* A. *virgata,* A. *heterophylla* and A. *æmula,* and although Linnæus's expressions "floribus sparsis" in his diagnosis, and "capitula hirsuta" in the description are somewhat contradictory.

β. *mutica;* callo sub foliis mutico, capitulis laxioribus numerosis fastigiato-paniculatis. Ramuli breves rigidi.

Hills of Cape district. *Mundt*!

35. A. *ferruginea* (Herb. Banks! MS.), ramulis rigidis subspinescentibus, foliis fasciculatis ternisve oblongo- v. cuneato-linearibus acutiusculis sericeo-pubescentibus, callis aculeatis, floribus 1–3-nis, calycis villosi subinflati dentibus triangularibus tubo multo brevioribus, ovario 4–5-ovulato, legumine oblique ovato-lanceolato.—A. *tridentata,* Eckl. Zeyh. Enum. p. 201; E. Mey. Comm. p. 43 et Auct. plur. vix Linn.—Frutex humilis, rigide ramosissimus, tomento sericeo fulvens v. canescens. Folia maxima 5–6 lin. longa, sed pleraque multo minora. Flores intra fasciculos superiores sessiles, solitarii v. per 2–3 glomerati, sed nunquam revera in capitula terminalia dispositi. Calyx

latissimus, fere 4 lin. longus, dense fulvo-sericeus. Corolla calyce duplo longior, petalis intus rubro-violaceis, extus dense fulvo-villosis.

Maritime sands of Cape district, *Harvey!* *Zeyher*, n. 421! and other collections.

36. A. *purpurea* (Eckl. Zeyh. Enum. p. 201), ramis rigidis, foliis fasciculatis subternisve subcuneato-linearibus obtusiusculis dense sericeis, callo brevissime aculeato v. mutico, floribus lateralibus, calycis villosi subinflati dentibus acuminatis tubo vix brevioribus, ovario 4–5-ovulato, legumine oblique ovato-lanceolato.—A. *purpurascens*, E. Mey! Comm. p. 44.—A. *ferrugineæ* valde affinis, sed folia (sub-semipollicaria) tomento sericeo canescente v. fulvo dense obtecta, et laciniæ calycinæ multo longiores et angustiores.

Sandy hills towards the sea, in Clanwilliam district, near Zwartebeestkraal, *Drège*! near Bergvallei, *Ecklon* and *Zeyher*.

37. A. *dasyantha* (Eckl. Zeyh. Enum. p. 201?), ramis virgatis, foliis ternis fasciculatisve obovatis v. cuneato-oblongis brevibus piloso-hirtis v. demum glabratis, callo aculeato, floribus subsolitariis lateralibus, calycis hirsutissimi subinflati laciniis lanceolatis tubo brevioribus, ovario 4–5-ovulato, legumine oblique ovato acuto.—A. *ferrugineæ* affinis, sed habitus potius A. *æmulæ*. Rami elongati per totam longitudinem sæpe floridi. Folia pleraque 2 lin. longa, viridia et laxe pilosa vix sericea. Flores fulvo-hirsutissimi, iis A. *ferrugineæ* minores.

Maritime sands, Plettenbergs bay, George district, *Mundt*, according to *Ecklon* and *Zeyher*. I have not seen Mundt's specimens, but describe the species from specimens of *Thom's* and of *Bowie's*.

** *Ovario biovulato, callo mutico.*

38. A. *æmula* (E. Mey. Comm. p. 42), ramis elongatis virgatis, foliis fasciculatis subternisve oblongis muticis argenteo-sericeis, callo tomentoso mutico, floribus sessilibus lateralibus 1–3-nis, calycis villosissimi laciniis lanceolatis tubo vix brevioribus, ovario biovulato, legumine lanceolato acuminato villosissimo.—A. *ar-*

gentea, Eckl. Zeyh! Enum. p. 203 non aliorum.—Rami elongati, nunc simplices, nunc ramulis brevibus rigidis instructi. Folia vulgo dense fasciculata, 1–2 lin. longa, pube sericea alba nitentia. Flores 6 lin. longi, pilis albidis longis mollissimis dense vestiti. Species interdum A. *sericeæ* approximatur, sed flores constanter intra fasciculos solitarii v. 2–3-ni, nec ad apices ramorum evolutorum dense capitati.

Caledon and Swellendam districts, *Ecklon* and *Zeyher! Mundt! Zeyher,* n. 2342! and others; Hex river, *Drège;* Uitenhage on the Boschemann's river, *Zeyher,* n. 2343! and (if it be the same species) Honigvallei, in the Cederbergen, *Drège.*

SERIES III. SYNPETALÆ. Folia fasciculata, teretia trigona v. carinata nec plano-dilatata. Flores subsessiles, nunc in capitula terminalia conferti, nunc intra fasciculos foliorum laterales solitarii. Ungues carinæ alarumque ea breviorum tubo stamineo adnati. Legumen oblique ovatum, calyce brevius v. paullo longius. Calycis laciniæ sæpe (nec tamen in omnibus) foliaceo-dilatatæ, nervos tres distincte ostendunt. Vexillum in omnibus extus pubescens v. villosum. Carina intus glabra. Alæ glabræ, carina vulgo multo breviores. Ovarium biovulatum, glabrum v. villosum.

This is a very distinct and well characterized group, but being the only one in the genus that has any positive characters, would divide the whole far too unnaturally were it adopted as a distinct section.

§ 1. *Flores capitati.*

39. A. *aculeata* (Thunb. Fl. Cap. p. 584), foliis dense fasciculatis aculea iis subæquali suffultis lineari-carinatis pilosis, summis floralibusque apice hamato-mucronatis, floribus capitatis, calycis villosi laciniis apice hamatis tubo subæquilongis, vexillo villoso, carina glabra.—Frutex ramosissimus, insignis in eo quod callus sub foliorum fasciculo in aculeam excrescit 2–3 lin. longam. Folia inferiora sæpe obtusa et glabrata circa 2 lin. longa, superiora v. interdum fere omnia 2–3 lin. longa, apice hamato-recurva et cum ramulis pilis longiusculis patentibus hirta, rarius (uti in

specimine in herb. Banksiano servato) fere omnia recta, et mutica. Capitula densa, foliis floralibus calycisque laciniis foliaceis imbricatis hamatis squarrosa. Flores 5–6 lin. longi.

Paarlberg, Daal Josaphat, Zwartland, Paardeberg, Cape and Stellenbosch districts, *Drège*! *Zeyher*, n. 417! and others.

40. A. *chenopoda* (Linn! Spec. p. 1000), foliis fasciculatis subternisve subulato-trigonis rigidis mucronato-pungentibus, floralibus plumoso-hirtis, floribus capitatis, calycis laciniis subulatis rigidis pungentibus tubo multo longioribus, vexillo villoso, carina glabra, ovario glabro, legumine oblique ovato-falcato acuminato.—Bot. Mag. t. 2225 (nec t. 2233 huc falso interdum citata) Lodd. Bot. Cab. t. 316.—Folia nunc omnia recta acicularia, exteriora semipollicaria v. longiora, nunc 3–4 lin. longa, et interdum pleraque præsertim floralia recurva sed non hamata. Capitula densa, vulgo multiflora, pilis longis fulvis sæpius hirsutissima, etsi folia inferiora haud raro glabrescunt. Alæ minus abbreviatæ quam in affinibus.

Table mountain and neighbouring hills, *Drège*! *Mundt*! *Harvey*! and others.

41. A. *araneosa* (Linn! Spec. p. 1001) pilis longis hirsuta, foliis fasciculatis filiformibus flexuosis mucronulatis, floribus capitatis, calycis laciniis e basi lanceolata subulatis plumoso-hirtis tubo multo longioribus, vexillo villoso, carina glabra, ovario villoso, legumine oblique ovato-subrhombeo falcato-acuminato.—Bot. Mag. t. 829 (forma depauperata)—A. *Simsiana*, Eckl. Zeyh! Enum. p. 216 (non species homonyma, p. 200).—A. *pilosa*, Sieb! Fl. Cap. n. 48.—Folia vulgo dense fasciculata tenuia 4–6 lin. longa, undique pilis longiusculis e tuberculo sæpe ortis hispida, floralia flores æquantia v. corolla paullo breviora. Variat tamen foliis vix fasciculatis, v. glabrioribus, v. brevibus, v. rigidulis et longioribus (β. *rigidior*, E. Mey! Comm, p. 50) nunquam tamen pungentibus. Flores semper paullo minores quam in A. *chenopoda* et A. *ciliari*, vulgo 5–5½ lin. longi, interdum vix 4 lin., corolla calyce breviore.

Hills of Cape and Stellenbosch districts, in most collec-

tions. In Linnæus's herbarium, the name of *araneosa* is also given to specimens of A. *ciliaris,* and of A. *spicata.*

42. A. *ciliaris* (Linn! Mant. p. 262), foliis dense fasciculatis subulatis v. lineari-trigonis, floribus terminalibus capitatis v. hinc inde solitariis, calycis hispidi laciniis anguste lineari-lanceolatis costatis subtrinervibus tubo multo longioribus, vexillo villoso, carina glabra v. villosa, ovario hirsutissimo.—A. *appendiculata,* E. Mey! Linnæa 7. p. 157.—A. *dubia,* E. Mey. l. c.—A. *Meyeriana,* Eckl. Zeyh. Enum. p. 218. A. *papillosa,* Eckl. Zeyh.! Enum. p. 217.—Species quam maxime variabilis, ab A. *araneosa* distinguenda imprimis laciniis calyciniis latioribus subtrinervibus, floribus vulgo majoribus et vexillo crassiore villosiore, a sequentibus floribus supremis v. sæpissime omnibus capitatis. Folia nunc fere A. *araneosæ* tenuia, vulgo tamen validiora et densiora, inferiore sæpe glabrescunt et interdum fere omnia, et sæpius superiora v. interdum omnia pilis longis sæpe e tuberculo ortis hispida sunt, variant longitudine nunc vix 3 lin. nunc 5–6 lin., subulata v. lineari-carinata, incurva v. rarius recta. Flores interdum usque ad 7–8 lin. longi et fere semper iis A. *araneosæ* majores. Vexillum semper dense villosum, longiuscule mucronatum v. muticum. Carina in forma normali dense villosa, in varietatibus nonnullis glaberrima, in aliis parce villosa v. pilis raris conspersa.

Mountains of Cape, Stellenbosch and Caledon districts, where it is probably very common, as it is sent in almost every collection, although varying so much that it cannot always at first sight be recognised, but on examination its characters appear constant. It occurs in Linnæus's herbarium, both under the name of *ciliaris* and of *araneosa,* and the name of *ciliaris* is also there given to a specimen of A. *comosa.*

43. A. *oresigena* (Eckl. Zeyh. Enum. p. 216), from Uitenhage, and

44. A. *aulonogena* (Echl. Zeyh. Enum. p. 216), from Tulbagh valley, are both unknown to me, but from the description given appear to be allied to A. *ciliaris.*

§ 2. *Flores laterales v. ad apices ramulorum solitarii v. gemini.*

45. A. *comosa* (Thunb? Fl. Cap. p. 577), ramis hirsutis, foliis fasciculatis lineari-carinatis subulatisve mucronulatis hispidis, floribus ad apices ramulorum brevissimorum solitariis sessilibus, calycis turbinati hispidi laciniis lanceolatis trinervibus tubo duplo longioribus vexillo villoso multo brevioribus, carina glabra, legumine oblique ovato acuminato.—A. *macrosepalus*, Steud.? Flora 1830, p. 546 (ad hanc v. ad A. *elongatam* pertinens).—Frutex ramosior et rami magis divaricati quam in A. *ciliari*. Folia pleraque 3–4 lin. longa et fere semper hirsuta, ultima sub flore conferta. Ramuli floriferi laterales et breves sed fere omnes plus minus evoluti. Calycis laciniæ 3 lin. longi, a vexillo lineis 1–1½ superati.

Cape and Stellenbosch districts; Paarlberg and Dutoitskloof, *Drège*! also *Zeyher*! n. 427 (in Hooker's herbarium). *Scholl*! *Cayley*! I have followed E. Meyer in referring this to A. *comosa* of Thunberg, although his character leaves it doubtful whether he meant this or the following species, as is also the case with A. *macrosepalus* of Steudel. In Linnæus's herbarium the present species is included under A. *ciliaris*, from which it differs in calyx and inflorescence.

46. A. *elongata* (E. Mey. Comm. p. 63), foliis lineari-trigonis fasciculatis mucronatis glabris villosulisve, floribus intra fasciculos laterales haud evolutos sessilibus solitariis calycis, laciniis acutis trinervibus tubo villoso subduplo longioribus vexillo villoso paullo brevioribus, carina glabra, ovario villoso.—A. *Dregeana*, Walp. Linnæa, 13. p. 586.—Folia crassiuscula, 2–4 lin. longa, glabra v. pilis mollibus subadpressis villosa.

α. *virgata*, ramis elongatis virgatis, floribus (circa 5 lin. longis) in spicam foliosam secus ramos dispositis, ramo sæpe excrescente apice sterili.

β. *ramosissima*, caule ramosiore, ramulis brevibus, floribus (circa 4 lin. longis) paucis lateralibus.

Cape Colony, probably Cape or Stellenbosch districts, *Drège*! *Caley*! *Pappe*! *Harvey*! (both varieties), and *Zeyher*! n. 433, the first variety. These two forms look so different that it is diffi-

cult to consider them as one species, the var. β. coming very near to A. *comosa*, yet their characters are so much alike that, from their occurring together so frequently, it is not impossible the two may be found even on one bush. E. Meyer's description and name refer to α, but the specimens I received from *Drège* belong to β.

47. A. *nervosa* (E. Mey! Comm. p. 62), ramis tomentellis, foliis fasciculatis lineari-carinatis mucronatis puberulis subcanescentibusque, calycis turbinati tomentosi laciniis lanceolatis trinervibus tubo subæquilongis vexillo villoso multo brevioribus, carina glabra, ovario villoso.—Frutex ramosissimus floribundus. Folia rigidula, patentia, circa 2 lin. longa. Flores 5 lin. longi. Species a præcedentibus calycis laciniis brevioribus facile dignoscenda.

Grassy hills near Swellendam, *Mundt*! rocky situations Nieuwekloof, *Drège*! gathered also by *Thom*! According to Drège (Linnæa, v. 20), A. *remota*, Eckl. Zeyh. Enum. p. 218, from Tulbagh valley, is the same species, if so, their name, though not a good one, has the right of priority.

48. A. *uniflora* (Linn! Spec. p. 1001), foliis brevibus fasciculatis lineari-teretibus glabris hirtellisve, floribus subsessilibus solitariis geminisve, calycis laciniis foliaceis ovato-cymbæformibus tubo villosulo æquilongis, vexillo villoso, carina glabra, legumine pubescente oblique rhombeo calycem vix superante.—A. *cymbæformis*, DC., Prod. 2. p. 140.—A. *ericifolia*, Berg. Pl. Cap. p. 205 —A. *scaphoides*, Eckl. Zeyh. Enum. p. 206. teste Walp.—Folia ericoidea, 1–2 lin. longa. Species hirsutie variabilis, sed calycibus facillime ab omnibus distinguenda.

Cape district, probably very common, as it occurs in almost all collections. Plukenet's figure, quoted by Linnæus, is a very different plant, evidently one of the *Laterales*, and has led to the idea that Linnæus' and Lamarck's A. *uniflora* were different. Linnæus's own specimen, as well as his character, belong, without doubt, to the present species.

49. A. *prostrata* (Eckl. Zeyh. Enum. p. 206), from Swellendam, is said by them to be allied to A. *cymbæformis* (A. uniflora); their description indicates some very different species.

SERIES IV. LEPTANTHÆ. Folia fasciculata teretia, v. trigona. Flores subsessiles, nunc in capitula v. spicas terminalia conferti, nunc intra fasciculos foliorum laterales solitarii. Carina alarumque ungues a tubo stamineo et inter se liberi (etsi carina nonnunquam versus medium alis adhæreat). Ovarium 2–4-ovulatum, villosum. Legumen oblique ovatum v. subrhombeum, acutum, calyce brevius v. vix longius.—Stirpes vulgo molliter villosæ. Folia ericoidea. Flores in genere mediocres v. parvi. Calycis laciniæ angustæ v. rarius abbreviatæ et latæ. Vexillum ovato-oblongum, rarius late obovatum, nec orbiculatum nec oblatum. Carina recta v. parum incurva. Legumen multo magis compressum quam in *Lateralibus*, et forma nonnisi illi A. *frankenioidis* approximatur, huic vero calyces et corollæ omnino *Lateralium*.

§ 1. *Floribus spicatis v. capitatis.*

50. A. *nigra* (Linn.! Mant. p. 262), foliis fasciculatis brevibus subulatis muticis glabris v. vix puberulis, floribus spicatis capitatisve, calycis villosi dentibus late ovatis lanceolatisve tubo brevioribus, petalis villosis, vexillo ovato alisque carinam superantibus, ovario 4-ovulato, legumine oblique rhombeo calycem breviter superante.—A. *nigrescens*, E. Mey.! Linnæa, 7. p. 159.—A. *melanoides*, Eckl. et Zeyh.! Enum. p. 210. et teste Walp. A. *pallens* et A. *deciduifolia*, Eckl. et Zeyh. Enum. p. 210, et A. *globulosa*, E. Mey. Linnæa, 7. p. 159.—Species ab omnibus facile distinguitur dentibus calycinis brevibus latis et ovario 4-ovulato. Siccitate sæpissime nigrescit. Folia vulgo 1–2 lin. longa, crassiuscula, rarius 3 lin. longa et iis A. *spicatæ* subsimilia. Flores vulgo 3 lin. longi. Variat tamen calycis dentibus brevissimis obtusissimis v. lanceolatis tubo paullulum tantum brevioribus, bracteis nunc orbiculatis integris v. tripartitis, nunc anguste oblongis linearibusve, capitulo globoso, oblongo, v. rarius in spicam longiusculam extenso.

Frequent in the Cape district, as it appears in almost every collection.

51. A. *parviflora* (Berg. Pl. Cap. p. 208) foliis fasciculatis subulatis muticis glabris hirtisve, floribus in spicam paucifloram approximatis, calycis pubescentis dentibus ovatis lanceolatisve tubo brevioribus, petalis pubescentibus, carina alis breviore, ovario biovulato, legumine oblique ovato acuto calycem breviter superante.—Valde similis formis nonnullis A. *nigræ*, differt tamen statura minore, inflorescentia laxiore, floribus paullo minoribus et præsertim ovulis in ovario constanter 2 nec 4.

Mountains of Swellendam district; Gnadenthal, *Drège*! Puspasvalley and Kochmanskloof, *Ecklon and Zeyher*, Grootvadersbosch, *Zeyher*! n. 2332, also in the collections of *Thom*! *Bowie*! and *Burchell*! n. 6359.

52. A. *cephalotes* (Thunb.? Fl. Cap. p. 578) foliis fasciculatis brevibus obtusis crassiusculis glabris puberulisve, floribus capitatis, calycis villosi laciniis lanceolatis tubo paullo longioribus, vexillo ovali-oblongo villosulo carina glabra v. puberula longiore, ovario biovulato.—Frutex robustus, a varietate capitata A. *spicatæ* differt habitu, foliis crassioribus interdum subdilatatis, dentibus calycinis rigidioribus, floribus paullo minoribus.

Cape district, *Forbes*! Fransche Hoek, *Thunberg*; Zwarteberg, *Ecklon and Zeyher*, whose specimens, however, I have not seen; and it is doubtful whether Thunberg's plant be the same, although his short description agrees well with the specimens I have seen. One of them is included in the Linnæan herbarium, under A. *lotoides*. I have some doubts also whether the plant may not prove to be one of the numerous forms assumed by the A. *spicata* in particular soils and situations. The A. *cephalotes* of DC. is according to E. Meyer his A. *galeata*.

53. A. *cerrhantha* (Eckl. Zeyh. Enum. p. 208) from Uitenhage is unknown to me, but must again be very near A. *spicata*. Walpers refers it to A. *globosa* (Andr. Bot. Rep. t. 510) a very bad figure which does not appear to me to represent an *Aspalathus* at all.

54. A. *spicata* (Thunb. Fl. Cap. p. 578) foliis fasciculatis subulatis vix mucronatis piloso-hirtis glabratisve, floribus spicatis subcapitatisve, calycis hirsutissimi laciniis lanceolato-subulatis

tubo sublongioribus, petalis pubescentibus, vexillo ovato carinam superante, ovario biovulato, legumine oblique ovato acuto calyce breviore.—In forma normali ramuli tenues, virgati. Folia tenuia, 2–4 lin. longa, siccitate nigricantia. Spica pilis rufis v. canescentibus molliter villosa v. subplumosa, 1–1½-pollicaris. Flores singuli 5 lin. longi, albi. Variat tamen ramis nunc abbreviatis et inflorescentia fere A. *nigræ* (a qua floribus distinctissima est) habitu rigidiore, floribus minoribus etc. nec facile semper ab A. *cephaloti* distinguitur.

Sent in almost every collection from the neighbourhood of Cape Town. It is in the Linnæan herbarium, but included among the specimens marked A. *araneosa*. The A. *cephalotes β. albida* of Ecklon and Zeyher, which I have seen also in Burchell's collection, n. 5998, appears to be rather a variety of A. *spicata* than of A. *cephalotes*.

§ 2. *Floribus lateralibus v. interrupte spicatis.*

55. A. *ericifolia* (Linn.! Spec. p. 1000) foliis fasciculatis brevibus muticis villosis glabratisve, floralibus calycis tubum non v. vix superantibus, floribus lateralibus versus apices ramulorum interrupte spicatis, calycis villosi laciniis lineari-subulatis muticis tubo duplo longioribus, vexillo ovato-oblongo carinaque alis glabris breviore villosis, ovario biovulato, legumine oblique ovato acuto villoso calycem subæquante.—A. *ericoides*, E. Mey.! Linnæa, 7, p. 160.—A. *multiflora*, Thunb. Fl. Cap. p. 580?—A. *varians*, Eckl. Zeyh. Enum. p. 209 fide Drège.—Species cum sequentibus sæpe confusa, facile tamen distinguitur calycibus rigidulis 2–2½ lin. longis folia floralia multo superantibus et sæpius inflorescentia. Frutex est divaricato-ramosissimus. Folia iis A. *unifloræ* similia, raro linea longiora. Flores vulgo ad apices ramulorum spicas efformant foliatas subinterruptas 1–2 poll. longas. Vexillum vulgo laciniis calycinis dimidio longius, interdum tamen vix eas excedit.

Very abundant in the Cape district, whence it is sent by most collectors.—In the Linnæan herbarium, besides this species the A. *mollis*, *thymifolia*, and *microcarpa* are included under the name of A. *ericifolia*.

56. A. *mollis* (Lam. Dict. 1. p. 290) undique molliter piloso-hirtum, foliis fasciculatis subulatis vix mucronatis piloso-hirtis, floralibus calycis tubum multo superantibus, floribus lateralibus subsessilibus solitariis, calycis pilosi laciniis subulatis tubo duplo longioribus, vexillo ovato-oblongo carinaque alas glabras æquante villosis, ovario biovulato.—A. *muraltioides,* Eckl. Zeyh. Enum. p. 209 ex Walp. et Dr.—A. *flexuosa,* Thunb. Fl. Cap. p. 579 ex Walp.—Fruticulus ramosissimus, dense foliatus. Folia tenuissima, 2–4 lin. longa. Flores 3 lin. longi.

Paarlberg in Cape district, *Drège*! and if the synonyms adduced are correct, in Tulbagh valley and Swellendam mountains, *Ecklon and Zeyher*.—Included in the Linnæan herbarium under A. *ericifolia*. The A. *mollis* β. *flexuosa,* E. Mey. appears to me rather to belong to A. *thymifolia.*

β. *arcuata,* carina majore arcuata glaberrima, cæteris omnibus A. *mollis.*—In *Thom's* collection.

57. A. *thymifolia* (Linn. Spec. p. 1000) foliis fasciculatis parvis subulatis submuticis hirsutis glabratisve, floribus solitariis subsessilibus lateralibus, calycis pubescentis laciniis subulatis tubo non v. paullo longioribus, vexillo pubescente, alis carina puberulo glabrave brevioribus, ovario biovulato, legumine oblique ovato acuto puberulo calycem superante.—A. *hispida,* Eckl. Zeyh.! Enum. p. 207 vix Thunb.?—A. *frankenioides,* Eckl. Zeyh.! Enum. p. 207 non DC.—A. *multiflora* Sieb.! Fl. Cap. exs. n. 163.—A. *kannaensis,* Eckl. Zeyh.? Enum. p. 207.—Fruticulus diffusus v. divaricato-ramosissimus quam maxime variabilis, a binis præcedentibus distinguitur floribus parvis vix unquam duas lineas excedentibus et alis carina semper brevioribus. Folia raro (nisi in var. subsequente β,) lineam excedunt, sæpe semilinea breviora, floralia sæpissime calyce breviora. Flores infra apices ramulorum vulgo numerosi, non tamen tam distincte spicati ut in A. *ericifolia,* interdum rari secus ramos sparsi. Calyx lineam longus. Legumen acutum et valde compressum, calyce sæpe subdimidio longius.

Very abundant in the Cape and neighbouring district, from whence it is sent in almost all collections.

β. *tenuifolia,* foliis longioribus tenuibus.—A. *mollis* β. *flexuosa,* E. Mey.! Comm. p. 56 excl. syn. Thunb.?—Cape district.

γ. *micrantha,* floribus minoribus, calycis dentibus brevioribus. —A. *microcarpa,* DC.! Prod. 2. p. 139.—A. *micrantha,* E. Mey.! Linnæa, 7. p. 161.—Cape district, *Ecklon and Zeyher !* Burchell, n. 244 ! and 265 ! and some other collections.

δ. *albiflora,* glabrior, foliis brevibus, floribus parvis albis.— A. *multiflora,* E. Mey.! Comm. p. 57 (sub quo includit etiam var. γ?) Thunb.—A. *albiflora,* Eckl. Zeyh.! Enum. p. 207. —Uitenhage district, *Ecklon aud Zeyher !* (n. 264 of *Zeyher's* own collection) near Graham's town, *Burke !* also *Burchell's* n. 6909 ! and 394? and in some Cape district collections.

I had originally distinguished these several forms as species, and considered even that I might have confounded others under the var. α. but having afterwards a very numerous series of specimens before me, they appeared to form so complete a chain from one form to another, that I could no longer establish any lines of demarcation between them. I have adopted Linnæus' name of *thymifolia,* which appears to me to be intended for this plant, although he has no specimen so named in his herbarium, and although Plukenet's wretched figure is not applicable to this species, or indeed to any other. Specimens of two or three forms above given exist, however, in Linnæus' collection, but are among those named A. *ericifolia.* A. *flexuosa* of Thunberg may be a form of A. *araneosa,* or possibly A. *asparagoides.* For Lamarck's A. *thymifolia,* see A. *canescens.*

58? A. *candicans* (Ait! Hort. Kew. ed. 2. v. 4. p. 264) foliis fasciculatis subulato-teretibus muticis albo-sericeis, floribus lateralibus 1–3-nis ad apices ramulorum approximatis, calycis sericei dentibus brevissimis, petalis glabriusculis, alis cæteris brevioribus, legumine ovato-compresso sericeo-villoso calycem paullo superante. —Indumentum et folia A. *argyrææ* a cæteris *Leptanthis* recedunt. Specimina sylvestria paniculato-ramosissima, flores parvi fere A. *armatæ,* ob leguminis formam inter *Leptanthes* militat.

In *Nelson's* and *Oldenburg's* collections in the Banksian herbarium, also one of the specimens included in the Linnæan herbarium under P. *albens.*

49. A. *incurva* (Thunb. Fl. Cap. p. 578) foliis fasciculatis tenuissimis acutis glabris hirtellisve, floribus lateralibus solitariis sessilibus, calycis puberuli laciniis setaceis tubo longioribus, vexillo hirtello v. sericeo, alis glabris carinam subglabram longe superantibus, ovario biovulato.—Approximatur interdum A. *molli,* sed folia vulgo longiora, et facile distinguitur petalorum proportione. Vexillum vulgo (nec tamen constanter) acutum.

Cape and neighbouring districts; Paarl and Tulbagh, *Drège*! Paarl and Hottentotsholland, *Ecklon and Zeyher;* Hottentotsholland, *Alexander!*

60. A. *diffusa* (Eckl. Zeyh. Enum. p. 208), gathered by Mundt at Paarl and Plettenbergs bay in Stellenbosch district, is unknown to me. Walpers, who like myself had not seen it, refers it to A. *lepida,* but the short pod would place it among *Leptanthæ.*

61. A. *asparagoides* (Linn. fil! Suppl. p. 321) foliis fasciculatis tenuibus incurvis ciliato-hispidis, floribus lateralibus sessilibus solitariis, calycis hispidi laciniis subulatis tubo plus duplo longioribus corollam subæquantibus, vexillo pubescente carinam glabram superante, alis subbrevioribus, ovario biovulato, legumine oblique ovato acuto pubescente laciniis calycinis breviore.—A. *alpina,* Eckl. Zeyh. Enum. p. 218 (ex char.)—A. *flexuosa,* Thunb. Fl. Cap. p. 579?—Habitu formis nonnullis A. *araneosæ* approximatur sed inflorescentia et flores longe diversi. Fruticulus est ramosissimus, dense foliatus. Folia 2–3 lin. longa, siccitate nigricantia. Calyces (cum laciniis) 3 lin. longi. Vexillum calyce paullo longius, mucronato-aristatum v. rarius muticum.

In the collections of *Nelson*! *Bowie*! and *Burchell*! n. 5203 and 6131, and, if *Ecklon* and *Zeyher's* plant be rightly referred here, it is in the collection from Langekloof in George district.

62. A. *rubrofusca* (Eckl. Zeyh. Enum. p. 216, fide Dr.! Linnæa, v. 20), foliis fasciculatis subulato-trigonis incurvis rigidulis mucronatis hirsutis, floribus lateralibus sessilibus solitariis, calycis hirsuti laciniis subulatis rigidis tubo plus duplo longioribus corollam æquantibus, vexillo carinaque villosis subæqualibus alas

glabras superantibus, ovario biovulato, legumine valde obliquo ovato acuto villoso calyce breviore.—Rami virgati, longe et molliter pilosi, dense foliati. Callus sub foliis interdum acutus v. brevissime aculeatus. Folia pleraque 3 lin. longa, validiora ac in præcedentibus, sub villis vulgo rubentia et nitida. Calycis tubus lineam, laciniæ $2\frac{1}{4}$ lin. longi. Vexillum 3 lin. longum, obovatum apice rotundatum et aristato-acuminatum.

Uitenhage hills about the Zwartkops river, *Ecklon and Zeyher*, n. 1186! of the first, and 2340! of the second of *Zeyher's* separate collections.

SERIES V. LATERALES. Folia fasciculata, teretia v. trigona. Flores subsessiles laterales. Legumen ex ovario 2- (rarissime 3–4-) ovulato, villosum, exsertum, oblique ovatum v. lanceolatum, vulgo turgidum, maturitate horizontaliter patens v. reflexum.—Frutices nunc rigidi divaricato-ramosissimi, nunc ramulis dense foliatis elongatis donati, vulgo villosi v. subsericei. Calli sub foliis mutici, etsi in speciebus ultimis spina adest intra fasciculum foliorum, et in prioribus folia ipsa pungent. Flores intra fasciculos sæpissime solitarii, rarius subfasciculati, majusculi v. mediocres. Calyx latiuscule campanulatus. Alæ liberæ. Ovarium villosum. Ovula in omnibus duo tantum vidi, nisi in A. *terete* ubi 4, et in A. *vulnerante* ubi fere semper tria mihi occurrere. Series ab omnibus præcedentibus legumine exserto differt, inter sequentes vix nisi cum *Pinguibus* confuderes, his tamen habitus glabrior, flores minores, legumen glabrius minus turgidum.

§ 1. *Foliis juniperinis rigidis patentibus mucronato-pungentibus raro muticis semipollicem raro excedentibus.*

63. A. *teres* (Eckl. Zeyh! Enum. p. 215), foliis fasciculatis teretibus subulatis rigidis mucronato-pungentibus demum glabratis, floribus solitariis, calycis late campanulati villosi truncati laciniis lineari-subulatis mucronato-pungentibus tubo longioribus, vexillo villoso carinam pubescentem vix æquante, ovario 4-ovulato, legumine oblique ovato-lanceolato falcato-acuminato turgido sericeo-villoso.—Frutex v. arbusculus 10–15-pedalis. Rami robusti pubescentes. Folia dense fasciculata, subsemipollicaria, viridia. Flores 7–8 lin. longi; laciniæ calycinæ rigidæ, fere 3 lin. longæ.

Legumen 8–9 lin. longum, crassum, prope basin 3–4 lin. latum, apice acutum.

Vanstaadens-river hills in Uitenhage, *Ecklon and Zeyher*, n. 378! of *Zeyher's* Uitenhage collection, also *Burchell*! n. 4640. The A. *echinata* of E. Meyer, which Walpers refers to this species, is a different plant.

64. A. *vulnerans* (Thunb? Fl. Cap. p. 582), foliis fasciculatis subulatis rigidis mucronato-pungentibus hirtellis v. demum glabratis, floribus solitariis, calycis late campanulati villosi laciniis setaceo-pungentibus distantibus tubo vix æquilongis, vexillo villoso carinam glabram superante, ovaria (3-) ovulato, legumine oblique ovato-lanceolato turgido villosissimo.—A. *hirta*, E. Mey.! Linnæa, 7, p. 156.—Frutex ulicinus, ramosissimus, dense foliatus, ramis tamen minus robustis quam in A. *tereti*. Folia majora semipollicaria, pube sericea albida v. fulvida interdum evanida, nunc recta et valida, nunc tenuiora et incurva. Dentes calycini pungentes, sed multo tenuiores quam in affinibus. Flores nunc 6 lin., nunc fere 9 lin. longi. Legumen semipollicare, crassum, pilis longis vestitum, 3 lin. latum.

Swellendam mountains about Puspas valley and Kochmanskloof, *Mundt*! *Ecklon and Zeyher*, *Zeyher's*! coll. n. 2369; Giftberg, *Drège*!; also in the collections of *Scholl*! *Bowie*! and *Burchell*! n. 6979. *Thunberg's* plant is from Olyfants river, his description agrees with some, though not with the most common forms.

65. A. *hystrix* (Thunb. Fl. Cap. p. 377) foliis fasciculatis subulatis teretibus rigidis mucronato-pungentibus incano-tomentosis, floribus solitariis folia subæquantibus, calycis late campanulati molliter tomentosi dentibus basi dilatatis breviter setaceo-subpungentibus tubo subbrevioribus, vexillo dense tomentoso carinam glabram superante, ovario biovulato, legumine oblique lanceolato dense villoso-lanato.—Folia semper incano-tomentosa, raro semipollicaria, in speciminibus perpaucis (nec verosimiliter unquam in tota planta) submutica incurva et minus rigida. Flores vix semipollicares. Legumen 6–8 lin. longum, villis mollibus flavicantibus densissime vestitum.

Dry stony hills in Onderbokkeveld and Kendo, *Drège*! Atta-

quaskloof, *Gill*! also in *Masson's*! collection.—This appears to be correctly referred by E. Meyer to Thunberg's species, and according to a MS. memorandum of J. de St. Hilaire's in the Banksian herbarium, it is Lamarck's plant of that name. A very bad specimen so named in the Linnæan herbarium differs in the leaves not pungent and the longer calycine teeth. Linnæus the son, however, in his diagnosis expressly says *foliis spinosis*.

66. A. *rigescens* (E. Mey! Enum. p. 52) foliis fasciculatis teretibus subulatis rigidis mucronato-pungentibus hirtellis, floribus solitariis, calycis late campanulati pubescentis laciniis lineari-lanceolatis mucronatis tubo longioribus corollam subæquantibus, vexillo villoso carinam pubescentem superante, ovario biovulato, legumine oblique lanceolato appresse villoso.—A. *hystrici* affinis quidem, sed distincta imprimis calycis laciniis approximatis 2 lin. longis planis v. marginibus in sicco sæpe revolutis. Ovarium et legumen multo minus villosa.

About Port Elizabeth in Uitenhage and Gnadenthal in George district, *Drège*! Uitenhage district, *Zeyher*; former coll. n. 1185, and from Karroid places on the Winterhœksberg in the same district, *Zeyher*! n. 2322.—A. *rigescens* is referred by Walpers to A. *corrudæfolia*, but it appears to me quite distinct from the plant so called by De Candolle and Ecklon, and Zeyher. Drège refers Zeyher's n. 2322 to the A. *alopecuroides*, E. Mey., but the specimens I have seen in Hooker's herbarium are certainly different.

67. A. *echinata* (E. Mey! Enum. p. 51) foliis fasciculatis teretibus subulatis rigidulis mucronatis hirtis, floribus solitariis, calycis late campanulati villosi laciniis lanceolato-setaceis subpungentibus tubo subæquilongis, vexillo villoso carinam villosam superante, ovario biovulato, legumine oblique lanceolato pilis appressis brevibus villoso.—A. *corrudæfolia*, DC.! Prod. 2, p. 139, Eckl. and Zeyh. Enum. p. 216 vix Berg.—Rami divaricati, rigidi, tomentoso-pubescentes. Foliorum fasciculi sæpe distantes; folia ipsa 2 vel raro 3 lin. longa. Flores 4–6 lin. longi. Legumen 4–6 lin. longum, minus turgidum quam in præcedentibus. Species A. *vulneranti* subsimilis sed folia minora dimidio breviora tenuiora, corollæ minores villosiores, ovarium 2- nec 3-ovulatum, et legumen diversum.

Grassy hills of Uitenhage district on the Sondag and Zwartkops rivers, *Ecklon and Zeyher*! also *Zeyher*! first coll. n. 1111 and 1184! last coll. n. 2367! Zuureveld, *Gill*! Dutoitskloof, *Drège*! also *Burchell*! n. 3320.—A. *rigescens* of E. Meyer which has been referred to this species, is quite distinct. Bergius's description of A. *corrudæfolia* appears to me to agree much better with A. *chortophila*.

§ 2. *Foliis vix pungentibus, semipollice longioribus, ovario in omnibus biovulato.*

68. A. *acanthes* (Eckl. Zeyh.! Enum. p. 215), ramis hirtis, foliis dense fasciculatis longiuscule lineari-teretibus mucronatis rigidulis glabris v. hirtellis, floribus solitariis, calycis late campanulati villosi dentibus lanceolato-subulatis crassis mucronatis tubo suo longioribus, vexillo subsessili orbiculato villoso carinam glabram longe superante, legumine crasso villosissimo.—Frutex robustus, ramis floriferis sæpe ultrapedalibus dense foliatis. Folia in fasciculis numerosa, incurvo-erecta, 8–10 lin. longa v. interdum pollicaria, viridia. Flores ampli, crassi, sed folia non excedunt. Laciniæ calycinæ rigidæ, subpungentes, 4–5 lin. longæ. Legumen 6–7 lin. longum.

In Kannaland not far from the Gauritz river, Swellendam district, *Ecklon and Zeyher*! also *Scholl*!

69. A. *Burchelliana*, sp. n., foliis fasciculatis longiuscule lineari-teretibus vix mucronatis carnosulis glabris, floribus subsolitariis quam folia brevioribus, calycis late campanulati pubescentis dentibus tubo multo brevioribus, vexillo villoso carinam tomentosam breviter superante, legumine crasso turgido villoso.—Primo intuitu A. *verrucosæ* simillima, sed floribus villosis, et legumine facile distincta. Ramuli crassiusculi, tomentosi, callis elevatis. Folia pleraque 8–10 lin. longa, numerosa, incurva. Calyx 1½ lin. longus. Corolla duplo longior. Carina arcuata alas subsuperans.

From *Burchell's* collection, n. 7456!

70. A. *glomerata*, sp. n., foliis fasciculatis longiuscule subulatis mucronato-pungentibus rigidulis sericeo-tomentosis, floribus lateralibus glomerato-subracemosis quam folia multo brevioribus, calycis late campanulati tomentosi truncati dentibus setaceis tubo multo

brevioribus, vexillo late ovato villoso carinam glabram vix superante, legumine oblique ovato-lanceolato villosissimo.—Rami crassiusculi, pube molli vestiti. Foliorum fasciculi distantes v. ad apices ramulorum conferti. Folia in fasciculo plurima v. numerosa, majora pollicaria. Ramulus florifer intra fasciculum sæpe brevissime evolvitur et flores fert 4–12, singulis v. per 2–3 foliis 1–3 suffultis, pedicellis sæpe lineam longis. Calyx lineam longus. Corolla 4 lin. Legumen minus deflexum quam in affinibus sed in specimine nondum maturum.

From *Burchell's* collection, n. 5786!

71. A. *longifolia*, sp. n., foliis dense fasciculatis longiuscule subulatis subincurvis mucronulatis albo-sericeis, floribus solitariis glomeratisve folio multo brevioribus, calycis late campanulati molliter villosi dentibus brevissimis acutis, vexillo late orbiculato longe unguiculato villoso carinam glabram superante, legumine oblique ovato-lanceolato villosissimo.—A. *eriophyllæ* quodammodo similis sed folia longiora (1–1½-pollicaria), calycis dentes multo breviores, corollæ minores, et forma vexilli valde diversa.

From *Scholl's*! collection.

72. A. *eriophylla* (Walp. Linnæa, 13. p. 499), foliis dense fasciculatis longiuscule subulatis incurvis mucronatis argenteo-sericeis, floribus solitariis glomeratisve, calycis sericeo-villosissimi laciniis subulato-acuminatis tubo paullo brevioribus, vexillo obovali villoso in unguem brevem contracto carinam glabram superante, legumine oblique ovato-lanceolato turgido molliter villosissimo.—Folia secus ramos numerosa 8–10 lin. longa v. fere pollicaria. Flores sæpius solitarii, folia subæquantes. Vexillum 6 lin. longum, 3 lin. latum. Legumen 5 lin. longum.

Near Grahams town in Albany, *Zeyher*! n. 892, *Krebs*.

§ 3. *Foliis non pungentibus raro 4 lineas excedentibus.*

73. A. *laricifolia* (Berg. Pl. Cap. p. 204. non Lam.) foliis fasciculatis subulatis mucronatis glabriusculis, floribus solitariis lateralibus, calycis late campanulati villosi dentibus subulato-acuminatis tubo suo brevioribus, vexillo pubescente carinam glabram superante, legumine oblique lanceolato acutiusculo turgido villosissimo.—A. *laricina*, DC., Prod. 2. p. 141.—A. *genistoides*,

Eckl. Zeyh.! Enum. p. 214 et auct. quorund. non Linn.—Species variabilis nec semper facile ab affinibus præsertim ab A. *canescente* distinguenda, a cæteris carina glabra constanter diversa videtur. Folia numerosa, incurva v. subrecurva, 2–3 lin. longa. Flores semipollicares, dissiti v. in spicam foliatam approximati.

From the mountains near Cape town, in most collections. Burchell's n. 6321, is a smaller flowered variety.

74. A. *sericantha* (E. Mey.! Comm. p. 49), foliis fasciculatis subulatis mucronatis glabriusculis, floribus solitariis lateralibus, calycis late campanulati villosi dentibus subulato-acuminatis tubo subæquilongis, vexillo villoso carinam villosam superante, legumine oblique lanceolato acuto turgido villosissimo.—Similis hinc A. *laricifoliæ* et A. *canescenti,* a quibus differt carina villosa, hinc A. *echinatæ,* sed folia incurva et vulgo tenuiora, mucrone minus rigido, et præsertim legumen omnino *Lateralium.*

Eastern districts from Algoa bay, *Forbes*! to Port Natal *Peddie*! *Drège*!—also *Burchell's* n. 3485!

75. A. *canescens* (Linn. Mant.! p. 262), foliis fasciculatis subulatis acutiusculis canescentibus sericeisve, floribus solitariis lateralibus, calycis villosi dentibus tubo suo brevioribus, vexillo pubescente carinam glabram superante, legumine oblique lanceolato turgido villosissimo.—A. *neanthes* et A. *Jaubertiana,* Eckl. Zeyh.! Enum. p. 213, 214.—A. *thymifolia,* Lam. ex. J. St. Hil. in herb. Banks.—Species A. *laricifoliæ* valde affinis, differt indumento, sed et hoc character uti longitudo foliorum (2–4 lin.) quam maxime variat.

Apparently common, from Cape town to Caledon, as it occurs in almost all collections.

β. ? *Bowieana,* major, foliis longioribus (4–5 lin.), calycis dentibus brevioribus, floribus majoribus, legumine acutiore 7 lin. longo. An species propria?

From *Bowie's* collection (Herb. Hooker!), and recently communicated to me by Dr. *Alexander*! who gathered it at Kaimansgat, near Georgetown. A very handsome form, which may possibly prove a distinct species, although I have been unable to detect any positive characters to separate it from the larger forms of A. *canescens.*

76. A. *cinerascens* (E. Mey. Comm. p. 54), from Draakenstein (?), which I have not seen, is said to be allied on the one hand to A. *cærulescens*, E. Mey. (*Lebeckia microphylla*), on the other to A. *canescens*.

77. A. *hilaris* (Eckl. Zeyh. Enum. p. 214), and 78. A. *hiatuum* (Eckl. Zeyh. Enum. p. 212), both from Uitenhage, appear to me to be allied, the one, to A. *sericantha*, the other to A. *chortophila*; both are unknown to me.

79. A. *chortophila* (Echl. Zeyh. ! Enum. p. 211), foliis fasciculatis brevibus obtusis v. acutiusculis cano-tomentosis puberulis v. demum glabratis rigidulis, floribus solitariis, folia longe excedentibus, calycis late campanulati villoso-tomentosi dentibus subulatis distantibus tubo brevioribus, vexillo villoso carinam villosam breviter superante, legumine oblique ovato-lanceolato turgido villoso.—A. *frankenioides*, E. Mey ! Comm. p. 53, non DC.—A. *corrudæfolia*, Berg. ? Pl. Cap. p. 207, non DC.—Rami divaricati, post folia delapsa callis tomentosis verrucosi. Foliorum fasciculi distantes. Folia vulgo vix lineam longa, raro fere 2 lin. floralia tubo calycis breviora, omnia crassiora et obtusiora quam in præcedentibus. Corolla circa 4 lin. longa, vexillo crassiusculo. Legunem 4 lin. longum, 2 lin. latum.

Grahams town and Fish river, Albany district, *Ecklon and Zeyher* ! *Drège* ! *Gill* ! also *Wallich* ! *Nelson* ! and *Burchell*, n. 3533 ! Bergius describes the leaves of his A. *corrudæfolia* as blunt without points, which agrees better with A. *chortophila* than with A. *echinata* ; he says, however, that they are two lines long, which they very seldom are in A. *chortophila*, and this species appears to be only found much farther east than Bergius ever was. The plant he intended must therefore remain doubtful till his specimens shall have been re-examined. It may possibly be the A. *secunda*.

80. A. *intermedia* (Eckl. Zeyh ! Enum. p. 211), foliis fasciculatis minimis obtusis hirtellis, floribus solitariis, calycis campanulati tomentosi dentibus subulatis tubo brevioribus, vexillo pubescente carinam puberulam superante.—Forte A. *chortophilæ* varietas, foliis floribusque minoribus.

Uitenhage district, between Krakakamma and the Vanstaadens river, *Ecklon and Zeyher*!

81. A. *frankenioides* (DC.! Prod. 2. p. 139), foliis fasciculatis brevibus acutis v. obtusiusculis muticis canescenti-tomentosis, floribus solitariis, calycis campanulati pubescentis dentibus subulatis tubo paullo brevioribus, vexillo pubescente carinam glabram vix superante, legumine oblique falcato-ovato acuto calycem vix superante adpresse villosulo.—A. *albanensis*, Echl. Zeyh.! Enum. p. 211.—Habitus præcedentium. Folia raro lineam excedunt. Flores 3 lin. longi. Legumen valde incurvum, vix 2 lin. longum, 1½ lin. latum, multo minus turgidum quam in præcedentibus.

Albany district, *Ecklon and Zeyher*! (*Zeyher* coll. n. 910!), also *Burchell*! n. 3473. This and the following species come near the *Leptanthæ* by their pod, but their open calyx and broad vexillum are those of the *Laterales*.

82. A. *poliotes* (Eckl. Zeyh.! Enum. p. 213), foliis fasciculatis brevibus muticis tomentoso-hirtellis subcanescentibus, floribus solitariis, calycis tomentoso-villosi campanulato dentibus acuminatis muticis tubo subbrevioribus, vexillo villoso carinam glabram v. adpresse pubescentem breviter superante, legumine ovato-lanceolato adpresse villoso.—A. *leptothria* Eckl. Zeyh. Enum. p. 213, fide Walp.—A. *tomentosa*, E. Mey. in Dr.! Pl. exs. Comm. p. 55. —A. *frankenioidi* valde similis. Folia paullo longiora, 1–2 lin. longa, tomentum laxior, et legumen paullo longius.

Vanstaadens-river hills in Uitenhage district, *Ecklon and Zeyher* (*Zeyher*! coll. n. 714), Zuurebergen, *Drège*!—E. Meyer describes the calycine teeth as obtuse, whereas they are pointed in the specimens distributed by Drège, in which there may possibly be some mistake.

§ 4. *Foliis densis tenuibus vulgo setaceis incurvis, ovario biovulato.*

83. A. *Gillii*, sp. n., foliis fasciculatis incurvis subulatis acutis hirtellis, floribus solitariis, calycis villosi laciniis anguste lanceolatis tubo longioribus, vexillo villoso carinam villosam superante, legumine oblique lanceolato turgido dense villoso.—A. *sericanthæ* subsimilis, sed hirsutior, folia tenuiora longiora densiora, et præ-

sertim calyces diversi iis A. *echinatæ* v. A. *rigescentis* subsimiles. Habitus foliorum sequentium.

Cafferland, *Gill*! (in herb. Hook.)

84. A. *setacea* (Eckl. Zeyh.! Enum. p. 216), ramulis villosis dense foliatis, foliis fasciculatis setaceis mucronatis canescenti-villosis, floribus solitariis, calycis villosi campanulati dentibus lanceolato-subulatis mucronatis tubo subduplo longioribus, vexillo villoso mucronato-aristato carinam villosam superante, legumine ovato-lanceolato adpresse villoso calyce longiore.—A. *alopecuroides* E. Mey.! Comm. p. 52.—Folia 3–6 lin. longa, confertissima. Flores 4–5 lin. longi. Vexillum basi cordatum, vix dentes calycinos excedens.

Vanstaadens hills in Uitenhage, *Ecklon and Zeyher*! *Drège*! and at the mouth of the Omsamcaba, *Drège*! also *Burchell*! n. 3536.

85. A. *arachnoidea* (Hort. Berol ex Walp. Linnæa 13. p. 497) described from specimens raised in the Berlin Garden, is evidently closely allied to the preceding species.

86. A. *alopecurus* (Burch.! Cat. Geogr. n. 5561), ramulis lanato-villosissimis dense foliatis, foliis fasciculatis setaceis mucronatis hirsutis, calycis molliter villosi laciniis setaceis tubo dimidio v. subduplo longioribus, vexillo mutico carinaque villosis, legumine ovato-lanceolato molliter villosissimo calyce multo longiore.—Affinis A. *setaceæ*, at vix ejus varietas. Folia 3–6 lin. longa, pilis mollibus patentibus hirsuta. Inflorescentia A. *setaceæ*, sed calycis laciniæ multo angustiores. Legumina 3–4 lin. longa, villis mollibus rufis densissime obtecta.

In *Burchell's* and *Thom's*! collections.

87. A. *incurvifolia* (Walp. Linnæa 13. p. 497), ramulis dense foliatis, foliis fasciculatis incurvis setaceis mucronatis glabris v. vix puberulis, floribus solitariis, calyce villosulo campanulato breviter dentato, vexillo glabro v. vix puberulo mutico carinam glabram vix superante, legumine oblique ovato-lanceolato turgido villosissimo calyce multo longiore.—Folia circa 3 lin. longa, rigidiora iis A. *setaceæ*, multo tamen tenuiora quam in A. *laricifolia* inter quas species hæc subintermedia est. Flores parvi, foliis

breviores. Calycis tubus vix lineam longus, dentes brevissimæ, latæ, acutiusculæ. Petala calyce duplo longiora. Legumina e foliis exserta, 3–4 lin. longa, patentia v. reflexa et sæpe fere deorsum imbricata, pilis ferrugineis mollibus densissime vestita.

In *Burchell's* ! collection, n. 6754, also gathered by *Bowie.* !

§ 5. *Foliorum fasciculis spinam foventibus.*

88. A. *Chamissonis* (Vog. Linnæa 10. p. 597), ramulis gemmisve spinescentibus, foliis dense fasciculatis muticis incano-sericeis, floribus solitariis, calycis molliter villosuli late campanulati dentibus subulatis tubo vix æquilongis, petalis glabris, ovario biovulato, legumine oblique ovato-lanceolato crasso molliter pubescente.—Rami robusti divaricati. Foliorum fasciculi distincti, callo dense tomentoso. Folia numerosa, 2–3 lin. longa. Spinæ intra fasciculos nunc foliis breviores nunc longiores ramiformes foliatæ, nec externæ ut in A. *aculeata.* Flores fere A. *laricifoliæ.*

Table mountain, Cape district, *Mundt.* ! Tiger mountain, *Chamisso.*

89. A. *acanthophylla* (Eckl. Zeyh. Enum. p. 221) gathered by Mundt in Swellendam, may be either the A. *Chamissonis* or the A. *aculeata* imperfectly described, if not, it is some species entirely unknown to me.

Series VI. Macrocarpæ. Folia fasciculata (v. interdum terna ?) Legumen ex ovario multiovulato lineari-lanceolatum.—Species tres ovario et legumine ab omnibus distinctæ et *Lebeckiis* approximantes, duo priores habitu *Grandifloris* simillimæ, tertia, foliis planis, mihi ignota.

90. A. *filicaulis* (Eckl. Zeyh. ! Enum. p. 204) glabra v. pilosula, ramis tenuibus virgatis, callo sub foliis mutico v. vix mucronato, foliis fasciculatis paucis subulatis, floribus solitariis breviter pedicellatis, calycis pilosuli dentibus subulatis tubo longioribus, vexillo villoso carinam valde arcuatam glabram vix æquante, legumine adpresse puberulo.—Valde affinis A. *macrocarpæ.* Rami rubescentes. Pili laxi sparsi. Folia in quoque fasciculo 3–6, tenuia, erecta, 4–6 lin. longa (vel ex Eckl. Zeyh. longiora). Flores secus ramos pauci, vix 4 lin. longiores, nutantes,

pedicello lineam longo. Carina semicircularis, ovula ultra 20. Legumen maturum, 10–11 lin. longum, 1½ lin. latum, turgidulum, sutura seminali incrassata, fere *Lebeckiæ* nisi magis obliquum.

Near Tulbagh in Worcester, *Ecklon and Zeyher*! gathered also by *Harvey*!

91. A. *macrocarpa* (Eckl. Zeyh. Enum. p. 203) glabriuscula, ramis rigidis virgatis, callo sub foliis breviter aculeato v. inermi, foliis dense fasciculatis subulatis subglabris, floribus solitariis breviter pedunculatis, calycis puberuli dentibus tubo vix brevioribus, legumine elongato-lanceolato adpresse puberulo.—Habitu A. *Willdenowianæ* accedit, differt foliis brevioribus et imprimis leguminis forma. Calli sub foliis novellis brevisime aculeati, ætate tamen pulvini tomentosi excrescunt et aculei evanescunt. Folia 4–5 lin. longa, tenuia. Corollæ ignotæ. Legumen pollicare, 2 lin. latum, oligospermum, sed ovulorum vestigia plurima adsunt.

Mountains near Swellendam, *Mundt*!

92. A. *garipensis* (E. Mey.! Comm. p. 44) from the mouths of the Gariep, is described as having a linear pod, like the two last, but ternate flat leaves like those of A. *stenophylla*.

SERIES VII. GRANDIFLORÆ. Folia fasciculata teretia v. trigona. Flores laterales v. subterminales solitarii v. gemini. Legumen ex ovario pluriovulato crassum late lanceolatum. Flores majusculi, carina valde arcuata sæpe rostrata. Ovula vulgo 6 v. 7.—*Streptosema* et *Plagiostigma*, Presl.

93. A. *Willdenowiana*, ramulis rigidis, callo sub foliis inermi v. vix aculeato, foliis filiformibus subglabris, floribus solitariis paucisve brevissime pedicellatis, calycis villosi late et oblique campanulati dentibus subulato-acuminatis tubo subæquilongis, vexillo villoso, carina glabra arcuato-rostrata, stigmate vix obliquo, legumine oblique lanceolato villosissimo.—A. *verrucosa*, Willd. (teste Walp.) E. Mey.! et alior. non Linn.—A. *hystrix*, Eckl. Zeyh.! Enum. p. 219 non L. fil.—Rami virgati, sæpe tenues etsi rigidi. Folia dense fasciculata, pleraque semipollicaria v. longiora. Flores semipollicares, vexillo subsessili amplo orbiculato, carina circulari. Stigma multo minus obliquum quam in

sequentibus. Ovula 6. Legumen 6 lin. longum, 2–2½ lin. latum, crassum.

Mountains of the Cape and neighbouring districts, *Mundt*! *Ecklon and Zeyher*! *Drège*! *Alexander*! &c.

94. A. *leptophylla* (Eckl. Zeyh.! Enum. p. 219) ramulis rigidis subspinescentibus, callo sub foliis aculeato v. rarius submutico, foliis filiformibus mucronulatis glabriusculis, floribus solitariis geminisve brevissime pedicellatis, calycis pubescentis late campanulati laciniis lanceolato-subulatis tubo æquilongis, vexillo villoso, carina glabra arcuato-rostrata, stigmate valde obliquo, legumine oblique lanceolato villoso.—A. *laricifolia*, Lam. Dict. 1. p. 287 non Berg.—A. *verrucosa* litt. b. et c. E. Mey. in Pl. Dr.! exs. et Comm. p. 50.—Valde affinis A. *Willdenowianæ* et cum ea a Meyero et Preslio jungitur, differt tamen callo evidentius aculeato, foliis paucioribus vulgo longioribus, floribus paullo majoribus et præsertim styli parte stigmatosa longiuscule decurrente. Legumen paullo longius et minus villosum.

95. A. *rostrata* sp. n., ramulis rigidis spinescentibus, foliis in pulvine tomentoso fasciculatis subulatis carnosulis submuticis puberulis floribus solitariis brevissime pedicellatis, calycis pubescentis dentibus subulatis tubo brevioribus, vexillo villoso, carina arcuata longe rostrata, stigmate obliquo.—Affinis A. *leptophyllæ* sed distincta videtur. Calli mutici v. vix brevissime aculeati. Folia iis A. *leptophyllæ* vulgo breviora uti et dentes calycini, stigma minus obliquum, et carina in rostrum longum rectiusculum producta. Ovaria examinare mihi non attigit, ob flores nimis a vermibus exesos.

From *Scholl's* collection in the Hookerian herbarium.

96. A. *pinea* (Thunb. Fl. Cap. p. 582) ramulis virgatis, foliis dense fasciculatis subulatis mucronulatis subglabris, floribus versus apices ramulorum lateralibus v. terminalibus paucis subsessilibus, bracteolis simplicibus, calycis late campanulati villosi dentibus latis subulato-acuminatis tubo subbrevioribus, vexillo villoso, carina arcuato-subrostrata glabra, stigmate valde obliquo, legumine oblique lanceolato-falcato acuto villoso.—Folia A. *Willdenowianæ*, sed densiora, ramulos obtegunt. Flores nunc infra

apicem ramuli intra fasciculos solitarii, nunc per 3–6 ad apicem subcapitati, 9–10 lin. longi. Vexillum ovatum, a medio ad apicem acutum insigniter angustatum. Ovula vulgo 7. Legumen crassum, durum, pollicare, 3 lin. latum.

Cape district, *Sieber.* n. 161! *Reeves*! *Forbes*! and others.

97. A. *grandiflora*, sp. n., foliis fasciculatis lineari-trigonis acutis pilosis glabratisve nitidis, floribus solitariis paucisve subsessilibus, bracteolis trifoliolatis, calycis villosi laciniis lato-lanceolatis tubo sublongioribus, vexillo villoso, carina arcuato-subrostrata glabra, stigmate valde obliquo.—Habitus folia et bracteæ fere A. *galeatæ*. Folia tamen sæpe semipollicaria, cum aliis dimidio brevioribus fasciculata. Stylus A. *pineæ*. Flores pollicares, subterminales. Calyx 6 lin. longus. Vexillum obovatum, obtusissimum. Ovula vulgo 7.

From *Thom's*! collection in the Hookerian herbarium.

98. A. *galeata* (E. Mey.! Comm. p. 49) foliis fasciculatis brevibus lineari-carinatis acutis demum glabratis nitidis, floribus versus apices ramulorum paucis breve-pedunculatis, bracteolis trifoliolatis, calycis parce pilosi laciniis subulatis acuminato-pungentibus tubo longioribus, vexillo villosissimo, carina glabra arcuato-subrostrata, stigmate recto, legumine oblique lanceolato falcato villoso.—Rami elongati, ramulis numerosis 2–4-pollicaribus. Folia 2–3 lin. longa, in fasciculis numerosis patentia. Bracteolæ sub calyce duo oppositæ, appressæ, singulæ in foliola 3 linearia divisæ, character in hac specie et in A. *grandiflora* ut videtur constans, nec variabile uti in A. *nigra* observavimus. Flores 8–9 lin. longi.

Clanwilliam district between Pikeniers kloof and Oliphants river, *Drège*!

SERIES VIII. PACHYCARPÆ. Folia fasciculata, teretia trigona v. lineari-carinata. Flores terminales subcapitati magni. Legumen ex ovario pluriovulato crassum oblique lato-lanceolatum v. ovato-rhombeum villosum. Hanc seriem a *Grandifloris* inflorescentia nec non legumine vulgo breviore distinxi, forte cum iis in unam jungenda erit.—*Pachyraphea*, Presl.

99. A. *densifolia*, sp. n., ramis virgatis, foliis densissime fas-

ciculatis subulatis mucronulatis glabriusculis, floribus 2–4-natim capitatis, calycis laxe villosi laciniis lanceolatis acutis tubo brevioribus, vexillo villoso carinam incurvam obtusam glabram superante, ovario 6–ovulato, legumine oblique ovato-rhombeo acuminato crasso villoso.—Rami crassi foliis dense obtecti. Folia 3–4 lin. longa, erecta, in fasciculo numerosissima, callo prominente sed sæpius mutico. Flores arcte sessiles, semipollicares. Bracteolæ trifoliolatæ videntur sed pleræque a specimine jam delapsæ. Legumen fere lignosum, 5 lin. longum, 4 lin. latum.

From *Zeyher's* collection n. 428 ! not quoted in Drège's enumeration in the Linnæa, v. 19.

100. A. *triquetra* (Thunb. Fl. Cap. p. 578) foliis dense fasciculatis brevibus incurvis acutis carinato-triquetris glabris pilosisve, floribus 2–4-natim capitatis, calycis villosuli campanulati laciniis triangularibus acutiusculis tubo subæquilongis, vexillo pubescente carinam arcuato-subrostratam glabram æquante, ovario 4-ovulato, legumine oblique rhombeo crasso hirsuto.—Frutex ramosissimus, dense foliatus. Folia pleraque vix 2 lin. longa. Flores sessiles, 5 lin. longi. Legumen sublignosum, 4 lin. longum et latum.

Cederbergen and Dutoitskloof, *Drège* ! *Wallich* ! Tulbagh valley, *Ecklon and Zeyher*; also *Burchell*, n. 7718 !

101. A. *propinqua* (E. Mey. ! Comm. p. 53) foliis fasciculatis parvis trigonis obtusis cano-tomentellis, floribus terminalibus subcapitatis paucis, calycis molliter villosuli laciniis subtriangularibus tubo paullo brevioribus, vexillo pubescente carinam arcuato-rostratam glabram æquante, ovario 6-ovulato, legumine oblique ovato acuto sericeo-villoso.—Folia minus numerosa quam in præcedentibus, pleraque lineam longa. Bracteolæ trifoliolatæ. Legumen breve, maturum tamen non vidi.

Cederbergen near Ezelsbank, *Drège* !

Series IX. Carnosæ. Folia fasciculata (rarius terna) teretia v. trigona vulgo carnosa. Flores (mediocres v. majusculi) sessiles v. breviter pedicellati. Calyx subcarnosus. Petala sæpius glabra. Legumen glabrum, oblique lanceolatum v. subrhombeum, acutum, sæpius exsertum. Inflorescentia varia. Petala emarcida circa fructum sæpe persistunt. Ovarium glabrum v. postice ciliatum. Series imprimis glabritie et habitu plus minus carnoso distinguitur. Flores multo majores quam in *Pinguibus* quibus accedunt glabritie et interdum legumine, hoc tamen vulgo brevius est et erectius et in ultimis speciebus rhombeum et crassum fere *Pachycarparum* sed glabrum.

§ 1. *Floribus spicatis v. capitatis, foliis submuticis. Nonnullæ* Cephalanthis *ultimis subaffines.*

102. A. *callosa* (Linn. ! Spec. p. 1002) glaberrima, foliis ternis linearibus mucronato-acutis obtusisve, floribus spicatis, calycis laciniis ovatis lanceolatisve acutis tubo subæquilongis, ovario 4–5-ovulato glabro v. vix canescente, legumine oblique lanceolato calyce subduplo longiore.—Bot. Mag. t. 2329.—A. *Simsiana*, Eckl. Zeyh. ! Enum. p. 200 (non sp. homonym. p. 216). —*Sarcophyllum carnosum*, Sieb. ! Pl. Exs. n. 257 non alior.—Ob folia vix fasciculata intus concava extus convexa et interdum fere lineam lata hæc species inter planifolias et tereti-trigonas ambigit, sed ob glabritiem florum potius inter *Carnosas* quam inter *Cephalanthas* militat. Folia in forma vulgatiore circa 4 lin. longa, interdum 6 lin., at sæpe multo breviora. Flores 4 lin. longi. Legumen fere A. *spinosæ* sed suberectum, 4 lin. longum, 2 lin. latum. Variat foliis crasso-carnosis v. fere planis, obtusis v. acutiusculis etc.

β, brevifolia, foliis 1–2 lin. longis, floribus minoribus paucioribus.—A. *tylodes,* Eckl. Zeyh. Enum. p. 200.

Abundant on the sandy downs in the Cape and neighbouring districts, occurring in almost every collection, the var. β in those of *Mundt* ! and *Alexander* !

103. A. *erythrodes* (Eckl. Zeyh. Enum. p. 200) from Tulbagh, is considered by Walpers as a variety of A. *carnosa,* it is evidently between that species and A. *callosa.*

104. A. *variegata* (Eckl. Zeyh. Enum. p. 201) foliis fasciculatis tenuibus brevibus carnosulis muticis glabris, floribus laxe et breviter racemosis subcapitatisve, calycis campanulati minute puberuli carnosuli dentibus acuminatis tubo brevioribus, vexillo vix puberulo carina valde arcuata breviore, ovario 4-ovulato, legu-

mine oblique lanceolato glabro calyce duplo longiore. Fruticulus ramosissimus, floribundus, ramulis tenuibus. Folia patula, circa 2 lin. longa. Flores longitudine A. *callosæ,* sed latiores, nutantes, pedicellis 1–1½ lin. longis, racemis 3–6-floris umbellæformibus, v. capituliformibus. Legumen fere A. *carnosæ,* 5 lin. longum, 2 lin. latum.

Cape flats, *Zeyher*! n. 429, also *Wallich*! *Harvey*!

105. A. *carnosa* (Berg. Pl. Cap. p. 206) glabrum v. ramulis vix puberulis, foliis fasciculatis lineari-teretibus muticis, floribus breviter pedicellatis subcapitato-racemosis, calycis campanulati carnosuli dentibus latis obtusis tubo subduplo brevioribus, vexillo puberulo carinam glabram æquante, legumine oblique lanceolato calyce subduplo longiore.—Bot. Mag. t. 1289.—Frutex ramosissimus. Folia patentia, 2–3 lin. longa. Flores fere sessiles, 4–5 lin. longi. Calyx 2 lin., variat laciniis longioribus brevioribusve, semper tamen obtusis. Legumen 4–5 lin. longum, 1½–2 lin. latum, fere erectum.

From the collections of *Caley*! *Scholl*! *Harvey*! *Burchell*! (n. 604) and others probably from the neighbourhood of Capetown. It is in the Linnæan herbarium marked "A. carnosa Berg." and "A. thymifolia carnosa, Berg.," but it is not the A. *carnosa* of Linnæus' Mantissa, nor yet the A. *thymifolia,* Linn. Spec.

106. A. *sarcodes* (Vog. ex Walp. Linnæa 13. p. 480) pulvinis exceptis glabra, foliis fasciculatis linearibus mucronatis carnosis, floribus breviter pedicellatis solitariis geminisve terminalibus, bracteis omnibus late ovatis, calycis ample campanulati glabri carnosuli laciniis latis obtusis ad sinus dilatatis tubo subæquilongis, petalis glabris latis subæquilongis, ovario pluriovulato, legumine oblique lanceolato.—*Sarcophyllum carnosum,* Thunb! Fl. Cap. p. 573.—*Sarcocalyx capensis,* Walp. Linnæa 13. p. 480. —Haud absimilis formis maximis A. *carnosæ.* Folia incurva, 4–6 lin. longa. Bracteæ et bracteolæ crassæ, carinatæ, acutæ, calycis tubi dimidium æquantes. Calyx fere 6 lin. longus sinubus dilatatis uti nonnunquam occurrit etiam inter *Pingues.* Corolla 9–10 lin. longa, legumen 8–9 lin. v. interdum pollicare.

Steenberg on False Bay, *Thunberg*! *Pappe*! *Masson*! *Alexander*!

107. A. *sarcantha* (Vog. ex Walp. Linnæa 13. p. 689) ramis strictis puberulis, foliis fasciculatis teretiusculis carnosis glabris v. summis puberulis, capitulis terminalibus paucifloris, bractea subtendente latissima ovata lateralibus lanceolato-acuminatis calycem subæquantibus, calycis laciniis tubum æquantibus ovali-acuminatis corolla subcarnosa brevioribus.—A. *carnosa* Linn! Mant. p. 261. non Berg.—Folia 2–4 lin. longa. Flores gemini, terni v. plures. Calyx sæpe roseus, florens 4–5 lin. longus, fructifer ampliatus usque ad semipollicaris. Corolla 6–8 lin. longa. Legumen 8 lin. longum, forma A. *carnosæ*.

Cape district, *Mundt*, *Wallich*! and others; Simon's Bay, *Alexander*!

108. A. *capitata* (Linn. Amœn. Acad. 6. p. 92 et Auct. plur. non Berg.), ramis villosis, foliis dense fasciculatis lineari-triquetris subcarnosis mucronulatis incurvis, floribus capitatis, calycis late campanulati subvillosi laciniis late ovatis acutis tubo sublongioribus, petalis glabris, carina arcuato-subrostrata, ovario postice ciliato biovulato.—Lam. Ill. t. 620. f. 2.—A. *glomerata* Linn. fil! Suppl. p. 321.—Rami longiores et densius foliati quam in A. *carnosa*. Folia 3–5 lin. longa. Flores semipollicares, in capitulum densum vulgo multiflorum conferti. Carina valde arcuata, intus margine barbata.

Table mountain, Cape District, in many collections. The plant described under the same name by Bergius is certainly different, possibly A. *spicata* or A. *cephalotes*. Plukenet's figure quoted by him is so bad as to be no guide.

§ 2. *Floribus capitatis solitariisve, foliis mucronato-pungentibus.*

109. A. *floribunda*, sp. n., foliis subfasciculatis trigonis rigidis mucronato-pungentibus submuticisque glabris, floribus laxe capitatis, calycis glabri subcarnosi laciniis lanceolatis carinatis acutissimis tubo subæquilongis, petalis glabris subæquilongis, carina arcuato-subrostrata, ovario 4-ovulato.—Rami flexuoso-ramosissimi, breves, rigidi, novelli tomentelli. Folia in fasciculis dissitis sæpius pauca, 2 lin. v. paullo longiora, pleraque mucrone brevi rigido terminata, summa sub floribus majora et sæpe colorata.

Capitula 3–10-flora. Bractea subtendens ovata, acuminata, bracteolæ laterales lineares, acutissimæ. Calycis tubus linea paullo longior. Petala 3 lin. longa. Vexillum basi cordatum.

Zwarteberg near Caledon, *Mundt*! also *Bowie*!

110. A. *crassifolia* (Andr. Bot. Reg. t. 353) appears so nearly to resemble A. *floribunda* that I should have adopted the name, but that the figure represents the flowers larger, and the calycine divisions as very blunt instead of being remarkably pointed.

111. A. *batodes* (Eckl. Zeyh.! Enum. p. 215) from the same station as A. *floribunda* must be very near it, but the expression foliis *densis subulatis*, besides some minor points, deterred me from regarding it as identical.

112. A. *collina* (Eckl. Zeyh. Enum. p. 220) foliis fasciculatis trigonis rigidis mucronato-pungentibus glabris, floribus brevissime pedicellatis solitariis, calycis glabri subcarnosi laciniis subulato-acuminatis tubo longioribus, vexillo villoso carinam glabram arcuato-subrostratam vix superante, ovario 4-ovulato, legumine oblique ovato turgido.—A. *versicolor*, E. Mey.? Comm. p. 48.—Fruticulus rigide tortuoso-ramosissimus. Folia vulgo 2 lin. longa, basi præsertim crassa, mucrone brevi. Flores ad apices ramulorum brevium interdum vix evolutorum semper solitarii videntur.

Hills near Port Elizabeth, in Uitenhage, *Ecklon and Zeyher*! and if *Drège's* plant be the same, in Groote Zwartebergen. It is also among *Bowie's* plants.

113. A. *juniperina* (Thunb. Fl. Cap. p. 583), and 114, A. *trigona* (Thunb. l. c.), must be near the preceding, but I cannot recognise either of them among those I have seen.

115. A. *abietina* (Thunb. Fl. Cap. p. 583), foliis fasciculatis carnosis trigonis aristato-pungentibus glabris, floribus sessilibus solitariis geminisve, calycis subcarnosi glabri laciniis basi ovatis subulato-acuminatis tubo longioribus, petalis glabris subæquilongis, carina arcuata obtusa, ovario 6-ovulato. Frutex rigide ramosissimus, ramulis crassis tomentosis. Folia valde inæqualia, exteriora sæpe 4–5 lin. longa. Flores intra fasciculos laterales solitarii, v. ad apices ramulorum gemini, 5–6 lin. longi, fere

A. *aridæ*. Bracteolæ lato-ovatæ carinatæ, mucronato-pungentes.

In the Groote Zwartebergen, and on the Krom river, *Drège*!—Thunberg's description agrees sufficiently well for me to follow E. Meyer in considering this as his plant.

§ 3. *Floribus solitariis plerisque lateralibus, foliis muticis.*

116. A. *arida* (E. Mey.! Linnæa, 7. p. 156), glaberrima v. rarius appressa puberula, foliis fasciculatis lineari-teretibus muticis, floribus solitariis breviter pedicellatis, calycis latissime campanulati glabri carnosuli laciniis e basi latissima lanceolato-acuminatis tubo subæquilongis, petalis glabris latis subæquilongis, ovario biovulato, legumine oblique ovato-rhombeo corolla marcescente incluso.—*α. erecta*, E. Mey.! inermis, caule ramisque elongatis erectis, foliis brevioribus, corollis minoribus, (3–4 lin.) bracteolis linearibus.—A. *pinguis*, Eckl. Zeyh. Enum, p. 220, ex Dr. non Thunb.—*β. procumbens*, E. Mey.! rigidior, spinescens, ramulis brevioribus, foliis longioribus, floribus majoribus (4–5 lin.) bracteolis lanceolatis.—A. *spinescens*. DC. Prod. 2. p. 138? non Thunb.—*γ. grandiflora*, inermis, foliis crassioribus, floribus maximis (5–6 lin. longis). — Frutex divaricato-ramosissimus, ramis ultimis numerosis brevibus et sæpe præsertim in var. *β*. in spinam abeuntibus. Calli sub foliis prominentes, sæpe acuti at vix aculeati. Folia longitudine et crassitie valde variabilia uti magnitudo florum, ita ut species a Preslio distinctæ (*Cyphocalyx major et minor*), primo intuitu diversissimæ videantur, intermediis tamen numerosis junguntur. Fasciculi floriferi omnes laterales uniflori. Calyx nervus dorsalis in hac specie magis quam in affinibus incrassatus duplex et basi subsaccatus.

Cape and neighbouring districts, in the collections of *Drège*! *Zeyher*! (n. 420). *Burchell*! (n. 15). *Paterson*! *Bowie*! *Scholl*! *Harvey*! *Alexander*! etc. It is, therefore, probably some one of Thunberg's, though I am unable to identify it with any of his descriptions.

117. A. *pachyloba*, sp. n., ramis crassis tomentoso-villosis, foliis fasciculatis brevibus carnosis vix mucronatis glabris, floribus solitariis sessilibus lateralibus, calycis glabri v. puberuli laciniis lan-

ceolatis acutis tubo brevioribus v. vix æquilongis, vexillo basi dorso hirto carinam glabram vix superante, ovario postice ciliato biovulato, legumine oblique rhombeo crassissimo glabro.—Species distinctissima, hinc habitu *Lateralibus*, hinc floribus *Carnosis* affinis. Rami elongati, dense foliati. Folia incurvo-patentia, circa 2 lin. longa. Flores secus ramos numerosi, intra fasciculos arcte sessiles, bracteis parvis. Calyces 2 lin. longi, siccitate fuscescentes. Corolla fere 4 lin. longa, nunc fere omnino glabra, nunc vexillo plus minus hirtello. Legumen crasso-carnosum, 3 lin. longum et latum.

Mountains of Swellendam behind Kochmanskloof, *Mundt.*! *Zeyher*! n. 2354, Gnadenthal *Alexander*! also in the collections of *Bowie*! *Scholl*! and *Burchell*! p. 7861).

118. A. *pallescens* (Eckl. Zeyh. Enum. p. 210), gathered by *Mundt* on the mountains of Plettenbergs bay in George district, appears from the character given to be near A. *pachyloba*.

SERIES X. PINGUES. Folia fasciculata, teretia v. trigona. Flores (parvi) laterales, solitarii, sessiles v. breviter pedicellati. Petala glabra v. rarius sericea. Legumen glabrum v. sericeum, non turgidum, exsertum, oblique lanceolatum.—Folia vulgo carnosula obtusa v. vix mucronata, rarius sericea. Flores quam in *Carnosis* multo minores. Calyx nunc turbinatus nunc latiuscule campanulatus, dentes breves v. rarius elongati subfoliacei. Carina valde arcuata. Species a *Lateralibus* differunt legumine nec turgido nec villoso, a *Leptanthis* carina arcuata et legumine longiore, a seriebus subsequentibus inflorescentia.

§ 1. *Inermes, ovulis*, 4–6.

119. A. *verrucosa* (Linn! Spec. p. 1001), foliis fasciculatis longiuscule lineari-teretibus vix mucronatis carnosis glabris, floribus breviter pedicellatis lateralibus folio brevioribus, calycis subglabri dentibus tubo multo brevioribus, petalis glabris, ovario 4-ovulato, legumine oblique lato lanceolato leviter puberulo.—A. *succulenta*, E. Mey. Linnæa 7. p. 159.—A. *tuberculata*, Walp. Linnæa 13. p. 497.—Rami post folia delapsa callis prominentibus tomentosis verrucosi. Folia semipollicaria v. etiam longiora, numerosa, in-

curva. Flores 3 lin. longi. Calyx latiuscule et oblique campanulatus, sesquilinearis. Vexillum late ovatum. Carina arcuato-subrostrata. Legumen exsertum, reflexo-patens, 6 lin. longum.

Hills near Caledon and Hottentotsholland, *Ecklon and Zeyher, Drège;* gathered also by *Masson! Wallich!* and others. Linnæus's name is commonly attributed to a very different species (A. *Willdenowiana*), with which his short character agrees almost as well as with this one, which his herbarium proves to be the one he had in view.

120. A. *pinguis* (Thunb. Fl. Cap. p. 580), foliis fasciculatis brevibus vix mucronatis carnosis glabris, floribus subsessilibus solitariis lateralibus, calycis glabri oblique campanulati dentibus tubo multo brevioribus, petalis glabris, vexillo basi calloso, ovario postice ciliato 6-ovulato, legumine oblique lato-lanceolato.—Frutex laxe ramosus. Rami uti in præcedente post folia delapsa verrucosi. Folia 1–1½ lin. longa. Flores magnitudine A. *spinosæ* v. paullo majores. Calyx 1 lin. longus, costis vix apparentibus. Legumen patenti-reflexum, 5–6 lin. longum, sutura seminifera incrassata.

Piquetberg and Gnadenthal, *Drège*! Oliphants river in Clanwilliam, *Zeyher*! n. 439; Kamanassie hills, *Alexander*! also *Thom*! and a rather longer-leaved variety from Caledon, *Mundt*! The plant referred to A. *pinguis* by Ecklon and Zeyher, is said by Drège to be the A. *arida.*

121. A. *Mundtiana* (Eckl. Zeyh. Enum. p. 220), gathered by *Mundt* in the hills near Swellendam, may very possibly be a mere variety of A. *pinguis.*

122. A. *affinis* (Thunb. Fl. Cap. p. 580), foliis fasciculatis minimis carnosis obtusis demum glabratis, floribus lateralibus subsessilibus solitariis, calycis oblique campanulati glabri dentibus tubo multo brevioribus, petalis glabris, vexillo basi calloso, ovario glabro pluri- (6?) ovulato, legumine oblique lanceolato.—A. *minutifolia*, Vog.! in Walp. Linnæa 13. p. 500. Rami validi, ramulis numerosis post flores delapsos interdum induratis at non vere spinescentibus; cæterum hæc species valde affinis est A. *pingui*, nisi foliis ovoideis vix semilineam longis.

Dry hills, Aasvogelberg and Kendo, *Drège*! also in the collections of *Mundt*! *Thom*! *Bowie*! *Burchell*! n. 7526, etc.

123. A. *costulata*, sp. n., foliis fasciculatis brevibus carnosis obtusis demum glabris, floribus lateralibus sessilibus solitariis, calycis campanulati glabriusculi dentibus triangularibus acutis tubo brevioribus, petalis glabris, vexillo basi nudo, ovario glabriusculo pluri- (4-) ovulato, legumine oblique ovato-rhombeo puberulo.—Habitus et folia A. *pinguis*, sed flores majores, ut videtur rubentes nec flavi, calyx 1½ lin. longus, sæpius rubens, costis 15 parallelis prominulis et glandulis subpellucidis obscuris notatus. Legumen eo A. *pinguis* multo brevius, maturum tamen non vidi.

Cape Colony, *Scholl*!

124. A. *sanguinea* (Thunb. Fl. Cap. p. 580) foliis fasciculatis brevibus carnosis obtusis glabris, floribus lateralibus subsolitariis, pedicello calyce sublongiore, calycis turbinati glabri dentibus distantibus muticis tubo brevioribus, petalis glabris, alis carina incurva multo brevioribus, ovario basi hirtello 4–6-ovulato. —Frutex ramosissimus, habitu præcedentibus affinis, sed facillime distinctus floribus minoribus etiam in sicco sanguineis pedicello lineam longo suffultis, calyce basi acuto, aliisque notis.

Cape Colony, *Bowie*!

125. A. *nodosa* (Vog. ex Walp. Linnæa 13. p. 496) is unknown to me, but said to be near A. *sanguinea*.

§ 2. *Inermes, ovario biovulato.*

126. A. *adelphea* (Eckl. Zeyh! Enum. p. 212) foliis fasciculatis carnosulis subulatis obtusis glabris, floribus solitariis geminisve breviter pedicellatis, calycis glabri dentibus brevissimis, petalis glabris, alis carina arcuata brevioribus, ovario biovulato, legumine oblique lanceolato glabro calyce pluries longiore.—A. *iniqua*, Eckl. Zeyh! Enum. p. 212, A. *subtingens*, Eckl. Zeyh! l. c. et A. *rubescens*, Eckl. Zeyh. l. c. p. 213.—Habitus A. *pinguis* v. sæpius ramosior, ramulis minus robustis densius foliatis, floribus numerosioribus. Flores fere A. *sanguineæ* sed lutei v. aurantiaci, 2½–3 lin. longi, pedicello vix semilineam longo fulti.

Folia 1–2 lin. v. raro longiora, tenuiora quam in præcedentibus. Vexillum vulgo obtusum. Legumen patens, 4 lin. longum, sutura seminifera vix incrassata.

Uitenhage district, *Ecklon and Zeyher*! *Burke*! *Zeyher*! n. 755! also *Mundt*! *Bowie*! *Burchell*! n. 4286 and 4333.

127. A. *microdon*, sp. n., foliis fasciculatis brevibus teretibus obtusis carnosulis glabris, floribus solitariis geminisve sessilibus lateralibus, calycis glabri v. puberuli dentibus brevissimis distantibus, petalis glabris, alis carina arcuato-subrostrata paullo brevioribus, ovario puberulo biovulato, legumine oblique lanceolato subfalcato sparse pilosulo.—A. *affinis*, Eckl. Zeyh! Enum. p. 212. non Thunb.—A. *pinguis*, litt. c. E. Mey, in Dr! Pl. exs. et Comm. p. 60.—Primo intuitu pro varietatem haberes A. *pinguis* omnibus partibus minorem, sed ovarium constanter biovulatum; differt præterea habitu tenuiore, foliis vix lineam longis, floribus minoribus. Vexillum acuminatum.

Swellendam hills on the Zondereinde, Kars river, etc., *Ecklon and Zeyher*! *Zeyher*, n. 2350! on the Klyn Fish river, *Drège*!

β? *granulifera*, foliis minoribus, calycis dentibus minutis. An sp. propria? Ramuli numerosissimi tenues. Folia vulgo vix ¼ lin. longa, et inter omnia *Aspalathorum* minutissima, interdum vero specimina occurrunt inter hanc et formam normalem intermedia.

On the Kars river, *Mundt*! gathered also by *Bowie*!

128. A. *recurva*, sp. n., foliis fasciculatis brevibus obtusiusculis carnosulis glabris, floribus solitariis lateralibus, pedicello foliis sublongiore, calycis glabriusculi laciniis triangularibus marginibus incrassato-recurvis tubo æquilongis, carina glabra alas vexillumque glabrum v. puberulum subsuperante, ovario postice ciliato biovulato, legumine glaberrimo oblique ovato falcato-acuminato calyce 2–3-plo longiore.—Frutex ramis divaricatis, floriferis post flores delapsos persistentibus at non spinescentibus. Folia 1–1½ lin. longa. Flores 3–3½ lin. longi. Calycis tubus late turbinatus, costis prominulis. Vexillum ut in affinibus acuminatum. Species calyce A. *marginali* et *bicolori* approximans, inflorescentia tamen lateralis; ab A. *Wurmbeana* differt imprimis foliis

laciniisque calycinis brevibus. Legumen 3 lin. longum, iis *Carnosarum* subsimile sed patentissimum v. deflexum.

Cape Colony, *Paterson*! *Zeyher*! n. 419.

129. A. *Wurmbeana* (E. Mey! Comm. p. 58) foliis laxe subfasciculatis tenuibus carnosulis obtusiusculis glabris, floribus breviter pedicellatis solitariis geminisve lateralibus, calycis puberuli laciniis linearibus tubo turbinato longioribus, corollæ glabræ vexillo carinaque alas excedentibus, ovario glabro biovulato.—Quoad folia A. *lacteæ* et præsertim A. *incomtæ* affinis, sed calyce facile distincta. Folia pleraque 3–4 lin. longa. Calycis tubus $\frac{3}{4}$ lin. longus, laciniæ linea paullo longiores, ut in A. *recurva* foliaceæ, sed multo angustiores et margo recurvus vix apparet.

Wupperthal, *Drège*!

130. A. *lactea* (Thunb. Fl. Cap. p. 580) foliis fasciculatis lineari-teretibus subtrigonis obtusis mucronulatisve glabris, floralibus calyce longioribus, floribus 1–3-nis lateralibus breviter pedicellatis, calycis late campanulati obliqui glabriusculi dentibus tubo multo brevioribus, petalis glabris, vexillo carinaque alas superantibus, ovario glabro v. postice puberulo, legumine oblique ovato-lanceolato calyce duplo longiore.—Rami virgati ramulosi. Folia pleraque 2 lin. longa. Flores numerosi, pedicello vulgo $\frac{1}{2}$–1 lin. longo fulti, iis A. *spinosæ* subsimiles sed minores et albi. Legumen reflexum, 4–6 lin. longum, longiuscule acuminatum.

Mountains of Swellendam, *Zeyher*! n. 2348, Onderbokkeweld, *Drège*! also in the collections of *Thom*! *Scholl*! and *Burchell*! n. 6586.

131. A. *incomta* (Thunb? Fl. Cap. p. 579. fide E. Mey.) foliis fasciculatis lineari-teretibus obtusiusculis pube minuta pallescentibus, floralibus calyces superantibus, floribus subsessilibus solitariis lateralibus, calycis minute puberuli dentibus brevissimis, vexillo sericeo carinaque glabra alas breviter superantibus.—Ex specimine manco differre videtur ab A. *lactea* habitu laxiore, foliis præsertim floralibus paullo longioribus, pedicellis brevissimis, petalis sericeis. Nec ovarium nec legumen vidi.

Between Straat and Hex river, in Stellenbosch district, *Drège*!

132. A. *lepida* (E. Mey! Comm. p. 58) foliis fasciculatis

lineari-teretibus obtusis glabris pallidis, floribus lateralibus solitariis geminisve breviter pedicellatis, calycis puberuli dentibus triangularibus acutis tubo multo brevioribus, petalis sericeo-pubentibus, vexillo suborbiculato carina longiore, ovario pubescente biovulato.—Rami elongati. Folia 1–2 lin. longa, crassiuscula, carnosula, in fasciculis dissitis pauca subcanescentia at non ut in sequente sericea. Flores fere A. *spinosæ*, 3 lin. longi, pedicello 1 lin. longo. Species hinc A. *incomtæ*, hinc A. *spinosæ*, valde affinis.

Sandy hills, about Piquetberg, *Drège*!

133. A. *argyræa* (DC. Prod. 2. p. 139) tota tomento brevissimo incano-sericea, foliis fasciculatis lineari-teretibus muticis, floribus sessilibus solitariis lateralibus, calycis turbinati dentibus tubo brevioribus, petalis pubescentibus, ovario biovulato, legumine oblique ovato-lanceolato acuto sericeo.—Species tomento sericeo ei A. *niveæ* simili inter affinibus facile distincta, ab hac specie differt imprimis pedicellis calyce brevioribus (nec pluries longioribus). Folia 2–3 lin. longa. Flores magnitudine A. *spinosæ*. Legumen 6 lin. longum, 2–2½ lin. latum, forma ei A. *spinosæ* similis, sed dense sericeo-pubescens.

Uitenhage district, *Ecklon and Zeyher*! *Alexander*! Langekloof, *Drège*, also in *Thom's*! collection.

§ 3. *Spinescentes.*

134. A. *spinescens* (Thunb. Fl. Cap. p. 584), ramulis spinescentibus, foliis brevissimis obtusis carnosis subglabris, floribus solitariis lateralibus breviter pedicellatis, calycis dentibus brevissimis obtusis, vexillo carinaque puberulis alas superantibus, ovario glabro biovulato.—Folia A. *affinis*, a qua distinguitur spinis et ovario. Flores vix 3 lin. longi, pedicello lineam longo folia floralia fere semper superante.

Sandy hills of Grœnekloof, Cape district, *Drège*! I have followed E. Meyer in considering this plant as Thunberg's A. *spinescens*, the one so called by De Candolle appears to be rather the A. *arida*.

135. A. *spinosa* (Linn.! Spec. p. 1000), glabra v. tenuissime canescens, ramulis spinescentibus, foliis fasciculatis lineari-teretibus

muticis, floribus solitariis brevissime pedicellatis, calycis dentibus tubo suo brevioribus, vexillo ovali apice vix pubescente alas carinamque glabras subæquante, ovario biovulato, legumine sericeo-pubescente acuminato calyce 2–3-plo longiore.—Frutex divaricato-ramosus, foliis vulgo circa 3 lin. longis tenuibus. Fasciculi vulgo ramulum abortivum fovent spinescentem nunc brevem aphyllum nunc elongatum foliatum apice spinescentem; rarius spinæ omnino desunt. Flores 3–3½ lin. longi, rarius 4 lin. Legumen 3–4 lin. longum, plus minus pubescens. Variat præterea foliis brevioribus longioribusve, tenuibus v. incrassato-carnosis v. hinc inde dilatatis subplanis.

β. *flavispina*, glabrior, foliis tenuioribus, dentibus calycinis brevissimis, vexillo breviore, legumine paullo longiore glabriore. —A. *spinosa*, litt. c. E. Mey. in Dr. Pl. exs. et Comm. p. 59.—A. *flavispina*, Presl. Bot. Bem. p. 126, absque char.

γ? *inermis*, E. Mey.! Comm. p. 59.

δ? *horrida*, foliis crassis subdilatatis, legumine breviore villosiore.—A. *horrida*, Eckl. Zeyh.! Enum. p. 221.

A very common species, having the widest range of any of the genus, from the neighbourhood of Cape town, whence it is sent in most collections, through almost every district to Port Natal, *Drège*! *Krauss*.! n. 166.

136. A. *glauca* (Eckl. Zeyh. Enum. p. 221), from Swellendam district, may possibly be one of the numerous forms of A. *spinosæ*.

SERIES X. TERMINALES. Folia fasciculata, teretia v. trigona rarius solitaria v. terna, non v. vix carnosa. Flores ad apices ramulorum solitarii gemini v. racemulosi. Petala sericea v. glabra. Calyx turbinatus v. rarius latiuscule campanulatus. Legumen oblique lanceolatum, glabrum v. sericeum nec turgidum.—Series fere ab omnibus inflorescentia differt, a *Carnosis* nonnullis tamen potius habitu quam characteribus distingueres. Flores vulgo parvi, in speciebus paucis mediocres v. etiam in A. *astroiti* majusculi. Carina valde arcuata. Species nonnullas anomalas hic enumeravi quas nullibi melius collocare potui. In A. *Agardhiana* scil. folia plana et ovula plurima; in § 5 folia sæpe solitaria, et in § 6 inflorescentia inter terminales laterales subintermedia.

§ 1. *Foliis subfasciculatis glaberrimis, floribus ad apices ramulorum brevium v. vix evolutorum solitariis subgeminisve.*

137. A. *filifolia* (E. Mey.! Linnæa, 7. p. 158), foliis subulatis mucronatis, calycis laciniis setaceo-acuminatis tubo plus duplo longioribus,vexillo carinaque arcuata recte et longiuscule rostrata alas subduplo superantibus, ovario biovulato, legumine oblique lanceolato glabro calyce longiore.—A. *retroflexa,* Eckl. Zeyh.! Enum. p. 204, non Linn.—*Paraspalathus crocea,* Presl. Bot. Bem. p. 134.—Fruticulus laxe ramosus, glaberrimus, ramis sæpe rubentibus. Folia 1–5-na, valde inæqualia, longiora sæpe semipollicaria. Inflorescentia irregularis. Flores 4–5 lin. longi, etiam siccitate crocei v. aurantiaci, forma carinæ et alis brevibus insignes. Legumen 5 lin. longum, fere erectum.

Table mountain, Cape district, *Ecklon and Zeyher*! *Zeyher,* n. 418! *Wallich*! *Harvey*!

138. A. *fornicata,* sp. n., foliis subulatis carinatis v. margine recurvis mucronatis, calycis laciniis setaceo-acuminatis tubo sublongioribus, vexillo carinaque fornicata valde incurva subrostrata alas superantibus, ovario biovulato, legumine oblique lanceolato glabro calyce longiore.—Similis quidem A. *filifoliæ,* sed ob carinæ formam vix cum ea jungenda. Rami vulgo rigidiores, folia crassiora, dentes calycini breviores.

Table mountain, *Mundt! Thom!* The form of the keel is usually so constant in *Leguminosæ,* that I have always considered it as a good specific character; I have, however, some doubts whether it may not be occasionally variable in *Aspalathus.*

§ 2. *Foliis fasciculatis glabris sericeisve, floribus intra folia summa sessilibus solitariis geminisve.*

139. A. *retroflexa* (Linn. Spec. p. 1001), diffusa, foliis fasciculatis subulatis acutis glabriusculis, floralibus calyce multo brevioribus, floribus subgeminis sessilibus, calycis puberuli laciniis herbaceis acutis tubo longioribus, corolla brevioribus petalis glabris, ovario villoso biovulato, legumine lanceolato sericeo-pubescente calyce duplo longiore.—A. *galioides,* Berg. Pl. Cap. p. 210, E. Mey. in Dr.! pl. exs. ex parte.—Rami elongati, ramulis numerosis brevibus. Foliorum fasciculi præsertim in ramulis floralibus

distincti v. distantes. Folia 2–3 lin. longa. Flores 4 lin. longi, siccitate crocei v. aurantiaci, vexillum calloso-acuminatum.

Cape district, in most collections. This is generally considered as the A. *retroflexa* of Linnæus (except by Ecklon and Zeyher, who gave that name to the A. *filifolia*), and agrees with his character. The specimen in his herbarium is, however, marked "A. lævigata (galioides, Berg)," the former name he never published, and his own *galioides* appears to me to be distinct.

140. A. *bicolor* (Eckl. Zeyh. Enum. p. 205), from the Cape Flats, appears from their description to be closely allied to A. *retroflexa* and *galioides*, if not identical with one of them.

141. A. *galioides* (Linn.! Mant. p. 260) diffusa, foliis fasciculatis subulatis acutis glabris, floralibus calyce vix brevioribus, floribus subgeminis sessilibus, calycis glabriusculi laciniis herbaceis acutis tubo costato duplo longioribus corollam glabram æquantibus, ovario glabro biovulato.—A. *galioides var. foliosa*, E. Mey.! in Dr. Pl. exs.—Affinis quidem A. *retroflexæ*, differt tamen non solum foliis numerosis densis, floralibus longioribus, sed etiam corollis intra folia floralia et calycis lacinias subnumerosis, ovario fructuque glabris. Vexillum acute acuminatum uti carina alas superat.

Cape, Stellenbosch, and Swellendam districts, frequent from Cederbergen, *Drège*; to Gnadenthal, *Alexander*! In the collections also of *Masson*! *Nelson*! *Forster*! *Bowie*! *Burchell*! n. 12 and 7554, *Pappe*! &c. Among *Drège's* plants the tickets of *E. Meyer's* two varieties (A. *retroflexa* and A. *galioides*) appear in some sets to have been transposed by some accident.

142. A. *marginalis* (Eckl. Zeyh.! Enum. p. 213) ramosissima, foliis subfasciculatis subulatis carnosulis obtusis mucronulatisve glabris, floribus subsessilibus solitariis geminisve, calycis canopuberuli laciniis herbaceis lanceolatis acutis reflexo-marginatis tubo longioribus flore glabro dimidio brevioribus, ovario villoso biovulato, legumine oblique lanceolato sericeo calyce duplo longiore.—Fruticulus ramis erectis laxisve sed non elongatis. Folia vix 2 lin. longa. Flores magnitudine A. *retroflexæ* sed calycis laciniæ latiores et multo breviores marginibus incrassatis

reflexis et sic falso trinerves, et species idcirco a Preslio cum *Synpetalis* meis in genere suo *Trineuria* consociata.

On the Zwartkops river in Uitenhage, *Ecklon and Zeyher! Zeyher*, n. 38!

143. A. *albens* (Linn. Mant. p. 260?) glaber v. pube tenui canescens, foliis fasciculatis lineari-teretibus mucrone brevi subpungente, floribus solitariis paucisve sessilibus, calycis campanulati pubescentis dentibus tubo brevioribus mucronatis, petalis pubescentibus, ovario glabro biovulato.—Specimina pauca vidi fruticuli ramosissimi habitu A. *rubenti* subsimilis, sed virens est v. tenuiter canescens nec argenteo-nitens et flores villosiores vix 2 lin. longi.

Sandy hills, Cape district, *Drège*! This species requires further elucidation, I describe it from imperfect specimens so named by E. Meyer in Drège's collection, and there is reason to believe correctly so, in so far as it was probably included by Linnæus in his A. *albens*, but the two specimens in his herbarium appear to be A. *armata* and A. *candicans*. The latter requires further comparison with the present plant, and possibly they may turn out to be forms of one species which would then take Linnæus's name of A. *albens*.

144. A. *rubens* (Thunb. Fl. Cap. p. 576) foliis fasciculatis brevibus tenuibus albo-sericeis incurvis, floribus subsessilibus solitariis geminisve, calycis turbinati tomentosi dentibus tubo multo brevioribus, petalis sericeis, carina obtusa, ovario biovulato, legumine oblique lanceolato sericeo-villoso.—Fruticulus ramulis numerosis tenuibus. Folia 1–1½ lin. longa, pube argentea nitentia. Flores 3 lin. longi.

Van Staadenshills, Uitenhage, *Drège! Zeyher*, n. 377! Sidbury, *Burke!* also *Bowie! Burchell!* n. 4642.

§ 3. *Foliis fasciculatis glabris puberulisve, floribus ad apices ramulorum pedicellatis 2–3-nis v. breviter racemulosis, ramulis sæpe spinescentibus.*

145. A. *astroites* (Linn. Spec. p. 1000) foliis fasciculatis subulato-teretibus subtrigonis mucronato-pungentibus rigidis patentibus demum glabratis, floribus racemoso-capitatis, calycis

late campanulati puberuli laciniis subulato-pungentibus tubo paullo longioribus, vexillo puberulo carinam glabram arcuato-rostratam æquante, ovario biovulato, legumine oblique et late lanceolato glabro v. vix puberulo.—A. *speciosa*, Steud. Flora, 1830, p. 544.—Habitus foliorum et flores fere *Lateralium* § 1, sed inflorescentia et legumen potius *Terminalium*. Rami robusti floribundi, ramulis brevibus. Folia juniperina, in fasciculo valde inæqualia, majora semipollicaria. Flores 4–5 lin. longi. Legumen semipollicare, durum, sutura seminifera incrassata.

Cape and Stellenbosch districts, in most collections.

146. A. *acicularis* (E. Mey.! Comm. p. 46) spinescens, foliis fasciculatis patentibus tenuiter lineari-trigonis rigidulis mucronato-pungentibus glabris, floribus 1–3-nis breviter pedicellatis, calycis pubescentis laciniis aristato-subulatis tubo vix longioribus, vexillo pubescente, carina glabriuscula, legumine oblique lanceolato glabro.—Inter A. *astroitem* et A. *acuminatam* fere media. Habitus hujus, sed folia multo longiora ut in A. *astroiti* juniperina et inæqualia, sæpe 3–4 lin. longa. Flores et fructus iis A. *astroitis* multo minores.

Cape district, sandy hills at Ebenezer, and thence to the Kamiesbergen, *Drège! Harvey!* This is probably the plant which E. Meyer alludes to (without describing) in the Linnæa, v. 7. p. 161, under the name of A. *racemosa*.

147. A. *secunda* (E. Mey.! Comm. p. 47) spinescens, foliis fasciculatis lineari-teretibus mucronulatis glabris, floribus racemulosis, calycis hirtelli dentibus aristato-mucronatis tubo turbinato subbrevioribus, vexillo carinaque arcuato-rostrata sericeis alas superantibus, ovario biovulato, legumine oblique lanceolato sericeo-pubescente.—A. *pungens*, Eckl. Zeyh.! Enum. p. 220 non Thunb.—Folia fere A. *incomtæ*, v. A. *spinosæ*, tenuiora tamen et inflorescentia diversa. Frutex ramosissimus, ramulis brevibus. Folia majora 2–4 lin. longa. Racemi 3-5-flori. Flores 4 lin. longi.

Clanwilliam district near Brackfontein, *Ecklon, Zeyher!* Riebekskasteel, *Drège!* also in *Bowie's!* collection, with shorter leaves, and apparently the same from Caledon, *Alexander!* This may possibly be the true A. *corrudæfolia* of Bergius.

148. A. *genistoides* (Linn.! Mant. p. 261) inermis, foliis fasciculatis lineari-teretibus submuticis glabriusculis, floribus racemulosis, calycis glabriusculi dentibus subaristatis tubo turbinato brevioribus, petalis puberulis, carina longe et recte rostrata alas superante.—Habitu A. *secundæ* et A. *divaricatæ* accedit. Folia vulgo longiora, sæpe 3–4 lin. longa, ramulorum tamen vix lineam adæquant. Flores ab omnibus differunt carina ad angulum fere rectum curvata, ultra curvaturam in rostrum rectum obtusum 3 lin. longum producta.

I have only seen this in the Linnæan and Banksian herbaria; one of Linnæus's specimens, however, belongs to A. *divaricata*.

149. A. *acuminata* (Lam. Dict. 1. p. 287) spinescens, foliis subfasciculatis brevissimis trigonis obtusis v. mucronato-acutis glabriusculis, floribus solitariis 2–3-nisve breviter pedunculatis, calycis turbinati puberuli dentibus aristato-mucronatis tubo brevioribus, vexillo ovato carinaque arcuato-rostrata sericeis alas superantibus, ovario biovulato, legumine oblique lanceolato canescenti-puberulo.—Frutex divaricato-ramosissimus ramulis spinescentibus horridus. Folia vulgo linea breviora. Racemorum rhachis fere semper spinescit. Flores 3 lin. longi.

Cape district, *Ecklon and Zeyher! Drège!* and others.

150. A. *subinermis*, ramulis tenuibus rigidulis vix spinescentibus, foliis fasciculatis parvis tenuibus mucronatis muticisve glabris, floribus solitariis 2–3-nisve breviter pedicellatis, calycis puberuli dentibus brevibus mucronatis aristatisve, vexillo ovato carinaque arcuato-rostrata puberulis alas breviter superantibus, ovario biovulato, legumine oblique lanceolato canescenti-puberulo.—A. *acuminata β subinermis*, E. Mey.! Comm. p. 46 excl. syn. Thunb.—Affinis quidem A. *acuminatæ*, et forte præmonente Meyero ejus mera varietas, sed mihi diversa videtur ramulis non vere spinescentibus, foliis tenuioribus, floribus glabrioribus, dentibus calycinis brevioribus.

Cape district, *Drège! Scholl.! Wallich!*

151. A. *microphylla* (DC. Prod. 2. p. 143) foliis subfasciculatis brevibus lineari-trigonis acutis glabris exterioribus basi incrassato-trigonis, floribus solitariis geminisve breviter pedicellatis,

calycis turbinati glabriusculi dentibus lanceolatis acutissimis tubo vix æquilongis, vexillo orbiculato sericeo carinaque arcuato-rostrata glabra alas superantibus, ovario biovulato, legumine oblique ovato-lanceolato pilosulo calyce duplo longiore.—A. *divergens*, Willd. ex E. Mey! Comm. p. 45.—A. *leptocoma*, Eckl. Zeyh. Enum. p. 205 fide Walp. et Drège.—Rami virgati, tenues, elongati, divaricati v. diffusi. Folia nunc solitaria appressa fere lineam longa, sæpius tamen adduntur 2–4 exteriora multo minora. Flores 3 lin. longi.

Cape and neighbouring districts, *Ecklon and Zeyher*! *Drège*! *Zeyher*, *n*. 438! *Pappe*! *Mundt.*! *Burchell*! n. 921, *Alexander*,! etc.

152. A. *divaricata* (Thunb. Fl. Cap. p. 582) foliis brevibus fasciculatis teretibus v. trigonis mucronulatis glabris v. vix puberulis, floribus breviter pedunculatis racemosis subsolitariisve, calycis glabriusculi dentibus tubo multo brevioribus, vexillo orbiculato puberulo v. glabro carinaque arcuata alas angustas vix superantibus, ovario biovulato, legumine oblique lanceolato adpresse puberulo v. glabro calyce pluries longiore.—A. *galioides*, *Sieb.*? Pl. Cap. exs. non alior.—Habitus fere A. *microphyllæ* sed rami magis flexuosi sæpe intricati. Folia in fasciculo vulgo plurima, carnosula, raro linea longiora. Flores magnitudine A. *microphyllæ*.

Table Mountain, Cape district, *Ecklon and Zeyher*, *Harvey*! *Sieber*! and apparently the same from Uitenhage, *Zeyher*, *n*. 310! also in the collections of *Bowie*! and *Burchell*! n. 784, and is one of the specimens marked A. *genistoides* in the Linnæan Herbarium.

153. A. *vermiculata* (Lam. Dict. 1. p. 288) foliis fasciculatis minimis obtusis glabris puberulisve, floribus subgeminis breviter pedicellatis, calycis pubescentis dentibus brevissimis, corollæ sericeo-pubescentis alis carinam superantibus vexillo paullo brevioribus, ovario villosulo biovulato, legumine oblique lanceolato. —A. *sanguinea*, Eckl. Zeyh! Enum. 212, non Thunb.—A. *microphylla*, Steud. Flora 1830. p. 545, non DC.—Habitu primo intuitu A. *affini* approximatur, sed ramuli floriferi semper plus minus evoluti. Frutex est ramosissimus, floribundus. Folia vix

unquam lineam longa, sæpius multo breviora. Flores 3–4 lin. longi, sericei, rubentes.

Langekloof in George district, *Ecklon and Zeyher* !

β sericea, foliis calycibusque dentibus longioribus, floribus magis sericeis, ovario villosiore.—In *Thom's* ! collection.

§ 4. *Foliis fasciculatis ternisve incano-sericeis, floribus in racemo v. spica terminali subsessilibus.*

154. A. *Agardhiana* (DC? Prod. 2. p. 143) tota pube brevissima sericeo-incana, foliis ternis auguste linearibus acutis planis, racemulis terminalibus paucifloris, calycis incano-sericei dentibus ovatis acutis tubo brevioribus, petalis villosis, ovario villoso 4-ovulato.—Specimen unicum vidi mancum habitu alienum sed ad *Aspalathos* characteribus referendum. Tota planta more *Argyrolobiorum* sericea. Folia 6 lin. v. longiora, vulgo terna, e callo tomentoso more *Aspalathorum* nata. Calyces subsessiles, 2 lin. longi. Corolla duplo longior.

From a single specimen in the Herbarium of the late W. Forsyth, gathered probably by *Paterson.*

155. A. *armata* (Thunb. Fl. Cap. p. 577) foliis fasciculatis subulatis mucronato-pungentibus submuticisve sericeo-albis v. demum glabratis, floribus in racemo v. spica foliis longiore subsessilibus, calycis villosi dentibus acuminatis tubo vix brevioribus, petalis villosis vix calyce longioribus, ovario biovulato, legumine breviter oblique lanceolato turgido tomentoso.—*Buchenrœdera teretifolia,* Eckl. Zeyh.! Enum. p. 196.—Foliis approximatur A. *niveæ* et A. *argyræa,* pleraque 3 lin. longa sunt v. exteriora longiora, callo prominulo. Racemi semipollicares ad pollicares, floribus 3–6 secundis. Calyces 1½ lin. longi. Petala ratione calycis breviora quam in omnibus *Aspalathis.* Legumen turgidior quam in cæteris *Terminalibus,* 3 lin. longum, patens v. demum reflexum.

Bergvalley in Clanwilliam district, *Ecklon and Zeyher* ! *Drège* !; Table mountain, *Harvey* !—also *Masson* !

§ 5. *Foliis solitariis v. vix fasciculatis glabriusculis, racemis irregulariter paucifloris.*

156. A. *corymbosa* (E. Mey.! Linnæa 7. p. 159) foliis solita-

riis subfasciculatisve elongatis lineari-teretibus rigidis glabris puberulisve, floribus breviter pedicellatis paucis corymboso-racemosis, calycis turbinati puberuli dentibus lanceolatis tubo brevioribus, vexillo pubescente carinam pubescentem æquante, ovario biovulato, legumine longe lanceolato vix puberulo.—A. *cognata*, Presl. Bot. Bem. p. 126.—Partes novellæ pube subsericea canescunt, planta demum glabrescit. Folia quam in sequente crassiora, valde inæqualia, mucronulata, sæpe pollicaria v. longiora. Racemi brevissimi subcorymbiformes. Calyces 1 lin. longi, pedicello 1–2-lineari. Corolla 3 lin. Legumen 7–8 lin. longum, prope basin 1½ lin. latum.

Cape district, from the Table mountain to the Cederbergen, *Ecklon*! *Zeyher*! *Drège*! *Mundt*! *Harvey*! *Burchell*! n. 917, 8128, *Wallich*! and many others.

157. A. *tenuifolia* (DC. Prod. 2. p. 143) foliis solitariis subfasciculatisve longe subulato-teretibus rigidis glabris, floribus paucis interrupte racemosis, calycis vix puberuli turbinati dentibus tubo pluries brevioribus, vexillo puberulo carinam valde arcuatam glabram superante.—Folia pollicaria v. longiora, acicularia, sæpe solitaria v. uno exteriore cæteris longiore. Calyces valde obliqui, 2 lin. longi, pedicello 2–3-lineari. Racemi laxi, floribus perpaucis dissitis.

Piquetberg, Cape district, *Drège*!

Series XII. Pedunculatæ. Folia terna v. fasciculata, plana v. lineari-subulata. Flores ad apicem pedunculi elongati capillaris solitarii v. pauci.—Pedunculus nunc e fasciculo foliorum laterali oritur, nunc ad apicem ramuli plus minus evoluti, v. ramulo excurrente lateralis et extra-axillaris evadit.

§ 1. *Foliis ternis v. subfasciculatis, pedunculis terminalibus ramealibus v. rarius lateralibus ovario pluri-ovulato.*

158. A. *capillaris*, diffusa, subglabra, ramulis tenuibus, foliis 1–3-nis fasciculatisve lineari-subulatis subplanis acutissimis, pedunculis capillaribus unifloris, calycis dentibus setaceis tubo turbinato sublongioribus, ovario sessili 6-ovulato, legumine lanceolato.—*Ononis capillaris*, Thunb. Fl. Cap. p. 585. A. *pedun-*

culata, litt. b. E. Mey. in Dr.! Pl. exs. et Comm. p. 64.—Rami tenues, ramulis filiformibus intricatis, et tota planta in hac binisque speciebus sequentibus siccitate nigrescit. Folia valde inæqualia, majora semipollicara. Pedunculi pollicares v. longiores. Bracteæ sub flore binæ oppositæ setaceæ. Flores 4 lin. longi, primo intuitiu Lotum quemdam tenellum referunt. Vexillum late orbiculatum, carina multo longius.

Summit of the Table mountain, Cape district, *Thunberg*! *Drège*! *Harvey*! *Cayley*! *Alexander*! etc.

159. A. *pedunculata* (Lhér. Sert. Angl. t. 26) diffusa v. suberecta, ramosissima, puberula v. glabrescens, foliis fasciculatis rarius 1–3-nis lineari-subulatis subteretibus acutiusculis, pedunculis 1–3-floris, calycis dentibus tubo turbinato subæquilongis, ovario sessili 6-ovulato, legumine lanceolato.—Bot. Mag. t. 344.—A. *biflora,* E. Mey. Comm. p. 64.—*Acropodium suffruticosum,* Desv. Ann. Sc. Nat. Par. Ser. 1. v. 9. p. 408.—Habitus A. *bracteatæ* sed minus erecta, etsi rigidior et major quam A. *capillaris*. Folia quam in utraque vulgo longiora et crassiora. Species cæterum ab A. *bracteata* facillime distinguitur ovario et legumine sessilibus, ab A. *capillari* habitu, pedunculis brevioribus sæpe 2–3-floris, calyce majore, vexillo ratione carinæ minore.

Between Knoflockskraal and Kleinhouhoek, *Zeyher*! n. 2362, also from *Pappe!* in Herb. Hook.

160. A. *bracteata* (Thunb. Fl. Cap. p. 581), erecta, ramosissima, vix puberula v. glabra, foliis fasciculatis rarius ternis lineari-subulatis subteretibus, pedunculis unifloris, calycis dentibus setaceis tubo turbinato subæquilongis, ovario stipitato 3–4-ovulato, legumine subfalcato acuminato, basi in stipitem longe angustato.—A. *pedunculata,* litt. a. E. Mey. Comm. p. 64.—Frutex subdichotome ramosissimus, ramulis tenuibus sed brevioribus quam in A. *capillari.* Folia tenuia, subsemipollicaria, sæpe incurva. Pedicelli folia paullo tantum excedunt, apice ut in A. *capillari* bibracteati, et flores etiam iis A. *capillaris* subsimiles, sed ovarium uti et legumen constanter stipite longiusculo fultum.

Cape district, Paarl and Draakenstein hills, *Drège*! also *Sieber*! n. 46, and other collections.

161. A. *lanata* (E. Mey.! Comm. p. 64) foliis fasciculatis ternisve linearibus acutissimis planis longe pilosis, pedunculis unifloris, calycis laciniis tubo duplo longioribus subulatis muticis, vexillo hirsuto.—Flores ipse non vidi. Species habitu A. *bracteatæ* accedit, sed folia subplana, 6–8 lin. longa, uti rami pilis longis mollibus barbata. Pedicelli superant in specimine meo fere pollicares.

Piquetberg, Clanwilliam district, *Drège!*

162. A. *falcata*, sp. n., diffusa, laxe pilosa v. glabra, foliis ternis subfasciculatisve lineari-lanceolatis utrinque acutis planis lateralibus falcatis, pedunculis 1–3-floris, calycis dentibus tubo turbinato brevioribus, ovario breviter stipitato sub 6-ovulato, legumine longe lanceolato turgidulo.—Folia 6–9 lin. longa, 1–1½ lin. lata, sæpe undulata et falcato-incurva. Legumen fere *Lebeckiæ*, 10–12 lin. longum, 2 lin. latum, vix obliquum, acutum, turgidulum.

Tulbaghskloof, *Zeyher*, n. 436! also *Wallich*!

163. A. *nivea* (Thunb. Fl. Cap. p. 576) tota incano-sericea, foliis fasciculatis lineari-subulatis muticis, pedunculis 1–3-floris, calycis dentibus tubo vix æquilongis muticis, ovario 4-ovulato, legumine sessili oblique lanceolato sericeo-incano.—Species inter *Pedunculatas* indumento distinctissima. Folia dense fasciculata, 2–6 lin. longa, tenuia. Pedicelli 6–10 lin. longi. Legumen 8 lin. longum, prope basin 3 lin. latum.

Uitenhage district, *Ecklon and Zeyher*! *Drège*! *Mundt*! *Alexander*! *Burchell*, n. 4287!

§ 2. *Foliis fasciculatis, pedunculis e fasciculo foliorum ortis, ovario biovulato.*

164. A. *suffruticosa* (DC. Prod. 2. p. 144) foliis fasciculatis lineari-teretibus mucronatis viridibus glabris puberulisve, pedunculis 1–3-floris, calyce breviter dentato, vexillo pubescente carinam glabram superante, ovario biovulato, legumine oblique lanceolato adpresse puberulo.—A. *retroflexæ* habitu ramorum approximatur, sed pedunculi supra fasciculum ultimum foliorum semipollicares ad pollicares, tenues, aphylli. Folia patentia, incurva v. recurva, vulgo 2–3 lin. longa. Flores 3–4 lin. longi. Legumen

longe et anguste lanceolatum sed obliquum, 8 lin. longum, turgidulum.

Uitenhage district, *Ecklon and Zeyher*! *Zeyher*, n. 215! *Alexander*! I know not why Presl refers Desvaux's *Acropodium* to this species, which has not the character on which Desvaux founded his genus.

165. A. *ulicina* (Eckl. Zeyh. Enum. p. 205) foliis fasciculatis subulatis tenuissime spinescentibus rigidis stellatim patentibus, pedunculis 2–4 floris, calycis puberuli dentibus subulato-spinescentibus tubo turbinato longioribus, petalis sericeis, vexillo alas superante carina breviore, ovario biovulato, legumine appresse puberulo oblique ovato-lanceolato acuto.—Folia rigida, acicularia, valde inæqualia, pleraque semipollice breviora, extimo tamen sæpe 9–10 lin. longo, acumine longo tenuissimo sed pungente. Pedunculi capillares, sesquipollicares, inferiores gradatim in ramulos floriferos (sub floribus tamen nudos) abeunt. Pedicelli nunc brevissimi, nunc 1½ lin. longi. Flores magnitudine A. *spinosæ*.

Mountains near Tulbagh in Worcester district, *Ecklon and Zeyher*; Pikenierskloof, in Clanwilliam district, *Ecklon and Zeyher*! n. 416.

Besides Thunberg's synonyms above given, all of which require verifying in his herbarium, there remain four of his species which I have not yet mentioned, viz., A. *acuminata*, Thunb. Fl. Cap. p. 573, a name changed to A. *ambigua* by De Candolle, and A. *obtusata*, Thunb. l. c. p. 574, which, if *Aspalathi* at all, must be near A. *dasyantha* and A. *æmula*; A. *squamosa*, Thunb. l. c. p. 581, a misprint for A. *squarrosa*, very near to, if not the same as, A. *bracteata*, and A. *subulata*, Thunb. l. c. p. 583, a name applied in the Banksian and some other herbaria to the A. *filifolia*, but the description seems to me to apply rather to some one of the pungent-leaved *Carnosæ*, and at any rate the "Folia vix semilineam longa" will not do for the A. *filifolia*.

There are also A. *opaca*, Eckl. Zeyh. Enum. p. 215, A. *ramulosa*, E. Mey. Linnæa, 7, p. 162, and A. *alternifolia*, Spreng.

Syst. 3, p. 187, all insufficiently described for approximation even to other species.

Besides the several species of E. Meyer and others already referred to *Lotonosis*, *Lebeckia*, and *Buchenrædera*; A. *laxata*, Linn., is *Lotononis iuvolucrata;* A. *mucronata*, Linn., is a *Viborgia;* A. *orientalis*, L., is *Chronanthus orientalis*, DC. (sub Cytiso), A. *pinnata*, *indica*, and *ebenus* have already been referred, the two former to *Indigofera*, the latter to *Brya*.

BOTANICAL INFORMATION.

Scientific Mission to Thibet.

(Continued from p. 205.*)*

It is with much pleasure we continue the extracts from the correspondence of Dr. Thomas Thomson. His last letter was dated from the Nubra Valley, a division, says Mr. Thornton, in his Gazetteer, of Ladakh, or Middle Thibet; a singularly wild tract, on the south side of the Karakorum mountains, or eastern part of the Hindoo Koosh, bounded on the north, the east, and the south sides, by the Shy-Yok, or river of Nubra, which, rising in the Nubra Tsuh Lake, or glacier, embosomed in the mountain joins the Indus above and east of Iskardoh. The lowest part of this tract was estimated by Vigne to be more than 11,000 feet above the level of the sea. Dr. Thomson's next letter is dated

"Iskardoh,[*] Nov. 23, 1847.

"I have been putting off writing from day to day, in hopes that I should get such letters from Kashmir, as would tell me of my future movements, and in which direction I shall wend my way. However, though two despatches have arrived, they have contained only newspapers, so that I infer an intermediate packet has gone astray. This want of information, however, completely puts it out of my power to tell you anything of my future motions; and I do not know whether I shall find myself in a condition to write you regularly or not for the next month or two.

---

[*] Capital of Bultistan; latitude thirty-five degrees ten minutes, longitude seventy-five degrees twenty-seven minutes.—Thornton's Gazetteer.

"My last letter was from Nubra, dated the twentieth ult. The course of my journey from that date has been simple enough. I followed the course of Shayûk river the whole way to its junction with the Indus, and thence along the united stream to this place, surveying as I went along, so as to lay down the course of the river. I was rather unfortunate in weather; the end of autumn being the unsettled season in this part of the world, and I had dull cloudy weather almost the whole way. Occasionally it cleared up for a day or two, but the clouds soon returned, while much snow fell on the mountains all round: but I have had the good luck to get down without having any myself, except a very slight fall on two occasions, just enough to whiten the ground. The snow seems to avoid the valleys even when of no great breadth. The great elevation of the mountains is doubtless the cause. The valley of the Shayûk presents few features of interest, the mountains are bare, rugged, and desolate. At Nubra and one or two other places the valley of the river is wide and and gravelly, but in general it is very narrow; the mountains closing on the river. The road was, in consequence, frequently difficult. Where projecting rocks jutted into the river, and were impassable at the base, there were deep ascents over rather awkward-looking places. There are numerous villages along the banks, generally with a great quantity of fruit trees. The Apricot everywhere most abundant, as were Walnuts, Mulberries and other fruit trees, the numbers of these becoming greater as the elevation diminished. I saw a few Vines occasionally, but nowhere in any quantity. During the last eight days Plane trees made their appearance. The corn has of course been long ago cut, and as the trees have now almost entirely lost their leaves, the appearance of the country is very desolate. I arrived here on the 12th, and have been occupying myself as I best could, arranging my botanical and other collections, making observations to determine the latitude and longitude, measuring the breadth, depth, and rapidity of the stream, &c. I am, however, very tired of the place, and anxious to get away. The season of the year is much too advanced for plants, and I have exhausted the geology as far as my limited knowledge enables me to do so. The valley here is of great width, but several high rocky hills lie in the middle. It was formerly an extensive lake, with several islands, the alluvial deposits are of considerable thickness, and very plentiful; they are also remarkable for being very much distorted instead of perfectly level; such is their usual character. They generally consist of fine clay, but sandy and gravelly beds also occur, non-fossiliferous, yet in one place I found a few specimens of a *Planorbis*, and fragments of a *Lymnæa*. All along the river there are proofs of the former existence of lakes. Where the valley is wide, fine alluvial clays occur. In the narrow parts you find coarse conglomerate, the boulders frequently of enormous size. Shells I only found in one place on my journey, in the third march from Nubra. In all probability, however, they occur elsewhere; as of course my examination of the beds was of the most superficial nature.

"I am here about 7000 feet above the sea, water boiling a little above 199°. For the first five or six days of my stay, the weather was cloudy and dull. Since then there have been pretty regularly, alternate fine and cloudy days. To-day is bright and delightful. The thermometer stood at 16° at sunrise, which is rather too cold for early rising: but the temperature, now that the sun is well up, is delightful, though not much above 50° in the shade. The mountains all round are tipped with snow. There are a few Junipers upon them, looking like green tufts, but otherwise, beyond the precincts of the village, there is no tree vegetation. This is a striking proof of the effects of climate; for, although at the elevation of Simla, there is not here a tree to be seen. The distance from Kashmir is not a hundred miles in a straight line; yet there the sides of the mountains are a mass of forest. It is unfortunate that I am here so late, as, beyond this general fact, I can do little in studying the vegetation, everything being quite withered up. The few shrubs I am able to recognise are the same which I have been accustomed to ever since I have been in the dry climate, a Rose and *Hippophae* are the most abundant. A Barberry is frequent and new to me, and I recognise withered stems of several Gentians, of an *Iris* (common since Rutturin, except at extreme heights), *Prunella vulgaris*, &c., *Parnassia* and a few other plants. *Veronica Anagallis* and *Beccabunga* are found here as well as nearly all over the world.

"With regard to the water at great elevations, I cannot now make observations on the presence of air, but shall not forget to examine if I return. Fishes, however, are plentiful at Haulé, 14,700 feet, of great size, and little fellows of the dimensions of minnows I saw considerably above 15,000 feet. I exclude the Pugha fish, which is very large and flourishing at 15,500 feet and upwards, but where the heat of the water from the hot springs produces an unnatural state of things. At higher elevations, probably, the cold of the water, which is generally from snow beds, is a sufficient cause for the absence of fish. With regard to the other query, I may observe I have specimens of Lichens from high elevations, though I fear not enough for analytical purposes. I shall recollect that point too, if I ascend high again.

"Had the vegetation been more plentiful, I should have been obliged to devote much more time to my journey down the Shayûk, as I found the work of surveying, especially at first, very troublesome. I took a great deal of pains with it, regarding it as of great importance; but counting one's paces for five or six hours, day after day, becomes very monotonous work at last. I had, however, little to distract my attention as I went along, so that I did not feel the ennui so much as I should otherwise have done. With regard to the future, there are only two courses open to me; either to go into Kashmir, or to follow the course of the Indus downwards. The latter is what I wish to do, but I am not sure how far it will be advisable; nor can the point be settled till I hear from head quarters. If I go to Kashmir, I shall be in the way of writing regularly: if I go down the Indus, I shall write you a few lines again before I leave this, so that you may have further information."

"Dras, Dec. 15, 1847.

"I write at present three lines to say that I left Iskardoh on the 2nd for Kashmir; but on arriving here, the day before yesterday, find that it is impracticable to proceed further, and therefore I shall start to-day on my return to Iskardoh, to remain there for the winter. The snow is three feet deep, and, on the pass twenty miles a-head, indefinitely deep, so that I do not know whether this note will be forwarded a fortnight or a month hence: hence it is needless to write at length. I am quite well, and shall have plenty of occupation for two months in arranging my collections, &c.

"You may not hear from me again for some time, as I do not wish to send despatches, which would be only risking people's lives needlessly.

"Iskardoh, 24th Feb. 1848.

"Though more than a month has now elapsed since the despatch of my last letter,* yet I think it almost certain that this will reach you at the same time, as I have reason to believe that the messenger by whom I forwarded it, has not yet left Dras. Nor have I very much information of a positive kind to communicate to you, long as the interval is, having been shut up here by snow since the date of my last. At that time I was in great hopes that the worst of the season had passed. On the contrary, by much the coldest, as well as (from the frequent and heavy snow) the most unpleasant part has been during the past month. The duration of the cold weather and the quantity of snow are both considered by residents something unusual, and for me they have been very unfortunate, as in consequence of my expecting all along that I should be able to start, I have been kept in a state of comparative idleness; with the greater part of my things packed up and ready. Even now that the spring may, I trust, be considered fairly set in, we have so little sun, that the snow has hardly begun to disappear, though quite spongy and ready to melt with a couple of sunny days. The roads or pathways are free of snow, so I have made up my mind, unless it snows heavily, to commence my travels to-morrow. It is my intention to make eight or ten marches, according to circumstances, down the Indus, so as to be back here about the 13th of next month. I shall then be guided entirely by what I may hear from India, from which quarter, so soon as the pass is practicable, I ought to receive a very large packet; but as I have no more information than when I last wrote, I need not speculate much on that subject. With about one foot and a half of snow upon the ground, I have, of course, been in a great measure a prisoner. In the morning and forenoon I generally took a good walk, till a sharp thaw commenced, since which time the roads have been a mixture of snow and water. Neither the cold, nor the quantity of snow is by any means so great as at Ghuznë. The lowest temperature which I have observed here has been 17° Cent. To-day the thermometer rose to 43° F., and at sunset was at 34°. It is rather remarkable that the snow disappears so very slowly with such a temperature. For four days the temperature has risen above 40°, and yet the apparent change is confined to spots round houses, and to footpaths; the mass of snow, however, though not diminished in depth, has evidently melted considerably.

---

* The letter above alluded to, seems never to have reached its place of destination.

"Iskardoh, March 30, 1848.

"I have not written since the 24th ult., for evident reasons. On the 25th of February I left this place on an exploring expedition down the Indus. As soon as I got beyond the open country which forms the plain of Iskardoh, I found that the river entered an exceedingly rugged, narrow valley, the mountains on each side very precipitous, and the villages few in number, situated on terraces of alluvial conglomerate, at considerable elevations above the stream. The nature of the country made my progress slow, the road consisting of a succession of ascents and descents from the bank of the river, 500, 1000, or sometimes 2000 feet up, and then down again; so that the horizontal distance did not amount to more than one-third or so of the distance traversed. The snow soon disappeared close to the river, but the weather continued cold and unpleasant; vegetation making no progress, and the road getting worse and worse, I turned back after six marches, and reached Iskardoh again on the 11th inst. The road is quite impracticable for horses in consequence of the number of ladders, which form the only means of getting up precipices, so you may conceive that it was of the worst possible description. I did not get down below 6000 feet of absolute elevation, or 1000 below Iskardoh, and obtained scarce any additions to my collection. Since my return the change in the weather has been rapid; the thermometer now rises to 64°, and the snow may be said to have quite disappeared from the plains. I therefore start to-morrow for Kashmir, which place I hope to reach in eighteen days. The progress in vegetation is much slower than I anticipated. The wheat and barley were sown early in the month, and are now above the ground, by the aid of irrigation, but the willow buds are only beginning to swell and the Plane trees, Walnuts, Apricots and Mulberries are still quite dead to all appearance.

"Kashmir, 26th April, 1848.

"My situation for the last four or five months, in the midst of snow and cold, has been so thoroughly anti-botanical, that I have not had any matter to communicate to you which would have justified me in troubling you with many letters. That of 28th January, if it reached England, will have informed you of my unsuccessful attempt to cross the pass into Kashmir, and of my return to Iskardoh. At that time I was sanguine enough to hope that the winter was about to terminate. Unfortunately my anticipation did not prove correct: the heaviest snows and coldest weather occurred in February; and it was not till the 25th of that month that a change in the temperature sufficient to produce rapid thaw having taken place, I was enabled to commence moving about. Neither road being available, I turned my course down the Indus, but after six days' journey, finding the country exceedingly barren and mountainous, and that the change of elevation was not sufficiently rapid to produce any marked difference either in the nature or in the state of advancement of the vegetation, and that the country before me was quite uninhabited, and still more difficult than that I had passed through, I gave up the attempt to proceed further, and returned to Iskardoh. The district through which I made these six days journey is called Rondee. I have some difficulty in finding terms to describe to you the extremely barren and rocky nature of its mountains. It is quite impracticable for horses or cattle of any kind, ladders ten or fifteen feet in height occurring in many parts of the road, as the only means of ascending and descending the face of the rocks. There are a good many villages which in appearance do not differ from those near Iskardoh; the grounds are all terraced, and fruit trees (principally apricots) abound. Beyond the villages all is rock and stone. The melting snow had revived the patches of moss which abound in the crevices of the rocks, and swelled them like sponges, but I found very few which produced fructification. The fruit trees were not as yet in flower, so that you will not expect me to give you any detailed account of the vegetation. Indeed the only fact of interest which I observed was the occurrence of small woods of *Pinus excelsa* on the mountains on the south side of the Indus, in two or three places throughout Rondee, at elevations of 8 to 10,000 feet. I ascertained the species by means of a single tree on the bank of the river, which I was assured was the same species as those higher up. *Pinus excelsa* is, I believe, generally the coniferous tree which, excluding Junipers, rise highest; so from analogy it might perhaps have been concluded *a priori*, that it would occur furthest north. A species of *Fraxinus* (not seen higher up) was common near the river, just coming into flower,—the same species, as far as I could ascertain, which occurs also in Kanawar and Kamaon. Though the snow had only just disappeared, several ferns were in full fructification,—one of them, a very beautiful and delicate *Adiantum*, quite new to me. In my six days' journey, the bed of the river sunk about 1,000 feet, much too small a change to produce any alteration in the species of plants. One plant of the plains, however, or rather of the valleys at the foot of the mountains, I was able to recognise, from withered specimens, *Linaria ramosissima,* an abundant plant in many parts of the Punjaub, which I have not elsewhere seen at any considerable elevation; but the extremely rocky nature of the country, and the want of rain, are doubtless, in the autumn months, productive of a degree of heat far greater than that of the moister and more wooded districts, and little inferior to that of the plains of India.

I returned to Iskardoh on the 11th of March, and was glad to find that the snow had almost entirely disappeared. The pass from which I had been turned back in December was not yet practicable, so that I had to wait patiently for more than a fortnight longer before I was able finally to turn my back on the place of my winter residence. The advance of spring was by no means rapid. The weather was dry and sunny, with very often high winds, and there were none of those "genial showers" so common in other parts of the world in spring, and which so materially hasten its progress. The fruit trees, however, showed some indications of commencing life, and near melting snow on the banks of streams, and in other moist and marshy places, a few plants made their appearance. A *Crucifera* (*Hutchinsia ?*) and two minute *Gentians* were the earliest. *Tussilago Farfara* was welcomed as an old friend; and in sunny corners I picked up a specimen or two of a violet, a *Gagea,* a *Carex,* and one or two other *Cyperaceæ,* and a few mosses. Still it was with great pleasure that, having ascertained that at last the road was open, I commenced my march for Kashmir on the 31st March. I did not find much to interest me on the road till I reached this side of the pass, and as I made seven marches through snow, the journey was a fatiguing one. The part of Kashmir which is entered by the route I followed (the only one at present open), is the valley of the Scinde river, which, running east and west to the north of the great valley, and separated from it by a lofty range of mountains, unites its stream with the Jelam, a few miles below the the town of Kashmir. When I entered the valley of the Scinde, there was still deep snow, but the descent is with such rapidity, that after two days' journey I had the satisfaction of again standing on terra firma. To the snow unfortunately succeeded heavy rain which rendered my journey here less pleasant than it would otherwise have been. This is the rainy month in Kashmir (as in Cabool), the periodical rains not making their way across the high snowy range which forms the south boundary of the valley. As soon as I got out of the snow, of course I found the commencement of vegetation, and was of course busy enough. The rapidity of the descent brought me very quickly into different zones of vegetation; and as most of the trees were still bare of leaves, and only a few herbaceous plants in flower, I fear my observations are not of great value, and that I have no very clear idea of the nature of the changes which took place. From the crest of the pass, on which grew only a few birches and willows covered with snow, the descent to the valley of the river was very rapid, and pine forests soon came in sight,—*Pinus excelsa* as usual attaining the greatest height. A *Picea* (*Pindrow*) was also common. On the upper part of the river the banks were covered with pines, birches, poplars and willows, the deciduous leaved trees unfortunately not in a state to determine their species. By degrees all these trees left the river, and were only to be seen on the sides of the mountains, while the valley which had widened considerably was occupied by fields, fruit trees, and cultivated willows and poplars. The first shrub which occurred in flower was *Viburnum nervosum*, the rose-coloured buds and white flowers of which are exceedingly ornamental. I met with Falconer's *Fothergilia involucrata* in immense quantity in the lower half of the Scinde valley, and indeed find the vegetation to accord exactly with the description given by him as quoted at the end of the introduction to Royle's Illustrations. The Flora may be said to be intermediate between that of the Indus valley, and of the eastern part of the Himalaya: but in spite of the great difference in appearance produced by the abundance of forest, it is I am inclined to think considerably nearer the former. In richness and luxuriance it agrees with the Simla and Massoori hills, but though many species are common to both, yet, as Falconer has well remarked, the most characteristic species are absent; on the other hand, we have here many of the most characteristic plants of the Indus valley; for instance, *Juniperus excelsa, Rosa Webbiana, Myricaria, Ribes, Daphne,* a violet and several ferns. The cultivated trees, too, are common to both;—there are the same magnificent plane trees and walnuts, the same poplars, vines, apricots and apples.

"The Kashmir valley is very different from any other part of the hills that I have seen, and not at all what I expected to find. It is an extensive, perfectly flat plain, at present very much under water, indeed almost a swamp, and quite devoid of forest. Where not cultivated, it is grassy or marshy. Cultivated trees, however, are plenty, and, from a height, its appearance, surrounded as it is by a magnificent chain of snowy mountains, is exceedingly pleasing, almost beautiful, though not so much I think as the more mountainous and wooded parts of the Himalaya. As in the valley of the Scinde river, I am still too early to find many plants, but the young corn and the grassy meadows already produce a good deal to interest me. I am overwhelmed with *Cruciferæ,* white, yellow, and pink, and as, though in full flower, hardly one has a seed far enough advanced to ascertain the grand discriminating character of the tribes, I am quite unable to name them. Among the number, *Draba verna* (I think) is very common. I was not aware before, that it was a Himalayan plant. Curiously enough I have met with more than one of the plants which I had collected in early spring at Lahore,—the source of which I had been puzzled to trace,—a species of the Siberian genus, *Goldbachia,* is one of these.

"The letter from Humboldt, which you were so kind as to enclose, has been of the greatest possible interest and value to me, bearing as it does so much on the countries which I have visited, and to which I hope to return. The observations of our party will have done something towards answering some of the points referred to, and to the rest, as far as in my power, I shall not fail to turn my attention should I again have an opportunity. The occurrence of fish in streams at 15,000 feet, I considered at the time an exceedingly interesting fact. I do not think it likely that they could exist much higher; the same point seems to be about the highest level of human habitation and of cultivation.

"My future destination is very undecided. My own plans are fixed enough, but I do not know whether they will be approved of. I shall leave this in two or three days for Jamu, going up the valley, and crossing by the Banahal pass into the valley of the Chenab. I go to Jamu to get rid of my collections, which are now very bulky. Jamu is on the edge of the plains, and I shall there be able to put them on camels, and send them to Ferozepore where my other collections are. The distance from this is sixteen days' journey, and I shall traverse on the way every climate, from perpetual snow to the belt of tropical forest. My harvest, therefore, ought to be very rich. From Jamu my wish is to ascend the Chenab to a little above Kishtawar, thence due east across a snowy pass to the Zanskar river, which flows north to join the Indus through a Tartaric climate. It has appeared to me, on due reflection, that the country which for botanical objects is most important to visit, of all those in that part of the world to which access is practicable, is Ladakh and Nubra, the botany of which is, I believe, quite unexplored. The few plants which Moorcroft collected seem to be mostly either from this valley or from the neighbourhood of Dunkar in the Piti valley, and their number, even were they all Ladakh plants, is, in my opinion, quite significant. My route would, therefore, be down the Zanskar river to its junction with the Indus, then a few marches down the Indus to a place called Himis, where there is a pass across the mountains to the valley of the Shayuk, up which river I should like to march to Nubra, and thence to travel across the mountains to the pass which leads over to the Karakoram* range to Yarkund, and beyond that pass is Chinese territory into which there will be no possibility of penetrating. I should therefore return by Ladakh again into Kashmir about the beginning of September, and I should then proceed in October and November through the lower range of mountains to our own provinces."

---

* Information has arrived (Nov. 1848), of Dr. Thomson having actually reached the Karakoram range.

To another friend Dr. T. Thomson writes,

"Kashmir, April 26, 1848.

"My last letter to you was from Iskardoh, just previous to my leaving that place. I have now to give you an account of my travels and adventures on the road here, and of the appearance of the country which I have now reached. As I believe I told you in my last was my intention, I started from Iskardoh on the 31st of March, ascending the Indus by the same road which I had previously twice pursued in December. Some days of very mild sunny weather made travelling very pleasant, but the country had not the advantage of novelty, and the vegetation had made very little progress, so I was very eager to get on. The inclination of the bed of the Indus is, for the most part, very gentle, not rising, I estimate roughly, more than 1500 feet in the seven marches during which my road lay along it. For that period, therefore, the climate did not change very much, but on turning up the valley of the Dras river, a marked alteration for the worse was soon perceptible, the inclination of its bed being much more considerable, so that I ascended 6 or 700 feet in every march. On the second day I got among snow again. The weather, however, was so mild that there was no feeling of cold when in motion, and there would have been none at all but for the rapid thawing of the snow, which rendered it impossible to keep the feet dry. I was unfortunate too, in meeting with cloudy weather, which made the snow soft and yielding. Two rainy days and nights, also, were anything but pleasant. During one of these I was stationary, having travelled faster than the unpunctual authorities had expected, so that the arrangements for my progress were not made. In the Dras valley there were usually about three feet of snow, but in very many places, from the steepness of the mountain sides the snow had, by sliding down, accumulated to a much greater depth. I forget whether I described to you these avalanches, of which I saw numbers on the Indus during and at the end of the winter, in my last letter. They consist of balls of snow of all sizes, from a few inches to a yard or more in diameter, these being of course partially obliterated where fresh snow in quantity has fallen after the slip had taken place. On these avalanches there was now and then some little difficulty in passing. I had to leave my horse behind, as he sank so deeply through them that his progress became impossible. An occasional dip up to the waist was the only inconvenience I experienced myself, till reaching the last day's ascent, or that in which the Dras valley terminates and Kashmir is entered. That, however, proved a formidable day's work in consequence of a heavy fall of snow having commenced within an hour of my starting in the morning. The snow continued to fall thickly and heavily till the afternoon, when it cleared up a little. I had almost resolved to turn back, but had made so much progress that I thought it would be a pity. During the day about three feet of new snow fell, which rendered walking exceedingly laborious, and completely knocked me up. The distance was, I estimate, sixteen or seventeen miles, and for the last four or five I was so thoroughly exhausted that I had great doubts whether or not I should be able to finish the journey. Hunger had much to do with my condition, for the cold snow rendered it impossible to stop for breakfast, which is usually my custom in the middle of a march. The journey, however, was at last accomplished in fourteen hours, and though our accommodation was not of the most splendid description, I certainly enjoyed my dinner and rest much that night. The place where we stopped was uninhabited, but there was a large apartment built for travellers, unfortunately not in very good repair, so that I thought it best to sleep in my tent, leaving the house such as it was for my servants, &c. &c, my party numbering a good deal more than one hundred men, quite enough to fill it thoroughly. It continued to snow heavily all night, and I was awoke before daybreak by certain peculiarly ominous sounds which, on a little reflection, I was convinced were produced by the cracking of the ridge pole of my tent, from the weight of the snow on it. I had in consequence to jump up at once, and run for safety and shelter into the house.

"Of the pass between Dras and Kashmir, of course, I saw little or nothing. The ascent was very gentle, almost imperceptible indeed, and the accumulation of snow was quite incapable of estimate. I think, in assuming it in places at 100 feet deep, I am very considerably under the mark. This of course was not from direct falls, but from repeated accumulations of avalanches one on the top of another. The stream was often quite covered over for hundreds of yards uninterruptedly, so as to be completely invisible. The descent on the south side was also at first gentle, so much so, that from the great quantity of snow, I was not aware of the precise point where it commenced. It soon however became considerable, and latterly was very abrupt indeed, down a ravine and snowy pine forest, forming a striking contrast to the country in which I had passed the winter.

"It was on the 13th April that I crossed the pass, and as it continued to snow heavily all the next day, I did not attempt to move, but remained at Baltal, and made myself as comfortable as I could in the large room which I have described. My only suffering was from smoke which affected my eyes, already weakened by so much exposure to snow, to a very painful extent; nor was it possible for me to forbid fires, the whole party requiring not only warmth but food, of which they had had very little the day before. The part of Kashmir which I had entered was the valley of the Scinde river running east and west, and separated from the greater valley by a high range of mountains forming its boundary. Down this river I commenced my march on the 15th still through deep snow, but descending rapidly at the end of the second day, I found the country free of snow. Heavy rain compelled me to halt again on the 17th, and the next two days were not very much better, but I succeeded in making marches, and on the 20th I halted for the purpose of looking over my collections.

"As I had descended the valley of the Scinde river it had gradually widened, and on my march of the 21st, turning considerably to the south, I found it became very wide, and took up my quarters for the day in a village close to its termination and junction with the great valley. On the 22d, my road, after rounding a low ridge of hills (the termination of the range on the south of the Scinde valley), lay due east to, and through, the town of Kashmir to a very pleasant house in a garden, in which I have taken up my quarters.

T. THOMSON."

Figure and description of a new SONERILA *from Bombay; discovered by* N. A. DALZELL, Esq.; by W. J. H.

(TAB. XXIII.)

Sonerila is a genus of extremely elegant East Indian plants, which had been much neglected, and for a long time little understood. The first known species was described and figured by Rheede, in Hortus Malabaricus, under the name of *Soneri-ila*; and upon this and three new species, Roxburgh characterized and established the genus in his valuable Flora Indica; remarking, however, that "in its natural character, it agrees very exactly with *Burmannia;* but, further observing that the ovula are attached on their respective receptacles of the cells exactly as in *Osbechia Chinensis.*" Dr. Wallich properly referred it to *Melastomaceæ.* The history of the genus is fully given by Mr. Bennett, in the Plantæ Javanicæ of Dr. Horsfield; and to him we must refer also for a full character of the genus, and of the thirteen species with which he was acquainted. Many others, we have reason to believe, yet undescribed ones, exist in the Herbaria of others as well as in our own collection. Our present object is to figure and describe a new species lately received, with many other interesting plants from Bombay, and which, as far as we can ascertain, is unique in having no stem: hence we name it,

SONERILA SCAPIGERA, n. sp.;

Glaberrima acaulis, foliis radicalibus cordatis serratis longe petiolatis heteroneuris,* scapis folia æquantibus, pedicellis umbellato-racemosis, pedicellis flore longioribus, calyci tubo glaberrimo infundibuliformi obscure trisulcato; limbo trilobo lobis triangularibus acutis, petalis obovatis oblique acutis, staminibus stylum æquantibus, stigmate depresso-globoso.

HAB. The Ghauts, near Bombay; found in the rainy season. *N. A. Dalzell, Esq.*

The affinity of this is with *S. maculata*, Roxb. (and Bennett, Pl. Javan. Rar. p. 215); but this plant is smaller in every respect, really stemless, quite glabrous, not even ciliated at the margin of the leaves, the leaves themselves quite cordate, scarcely at all inæquilateral.

Tab. XXIII. Fig. 1, Flower-bud; f. 2, expanded flower; f. 3, transverse section of an ovary.

---

* See Mr. Bennett, l. c. for the application of this term.

ALPHABETICAL INDEX

OF THE CONTENTS OF THE SEVENTH VOLUME OF THE

LONDON JOURNAL OF BOTANY.

Algæ, New Zealand, Drs. Hooker and Harvey on, 443.
America (South), Contributions to Botany of, by J. Miers, Esq., 17, 57, 333.
Anemia Seemanni, Note on, by W. J. H., 564.
Aulacopilum, brief characters of, by W. Wilson, 90
Australia, Leichhardt's journey in, 322.
——— three new Mosses of, described by W. Wilson, Esq., 26.

Barley, Thibetian, 215.
Bentham, G. Esq., Contributions to the Flora of Guiana, 116.
——— Enumeration of Leguminosæ, 580.
——— Note on the Genus Benjaminia, 567.
Berkeley, Rev. M. J., Decades of Fungi, 572.
Bosnia, Dr. Sendtner's Botanical Journey to, 42.
Botanical Information, 28, 97, 161, 200, 237, 297, 370, 443, 537, 657.
——— Excursion to Shah Bilawul, by Dr. Stocks, 550.
——— Journey to Bosnia, by Dr. Sendtner, 42.
——— Mission to India, by Dr. Hooker, 237, 297.
——————— Santa Fè, by Fendler, 44.
Brazil, Mr. Gardner on the Botany of, 78, 286, 395.
British Flora, on some new plants of, by W. Mitten, 528.
Bromfield, Dr. A. W., Notes on the Botany, &c., of the United States, 138, 205, 370.

California, plants from, 385.
Campanula, further remarks on the pollen-collectors of, by W. Wilson, 92.
Canara, Plants of, distributed by M. Hochstetten, 161.
Chinese Mosses collected by T. Anderson, described by W. Wilson, 273.
Chinese Plants, on some new, by H. C. Hance, 471.
Conferva ægagropila, by Rev. T. Salway, 213.
Cruciferous Flowers, on the structure of, by A. Moquin-Tandon and P. Parker Webb, 1.
Cryptogamiæ collected on Pichincha, described by Dr. Taylor, 278.

Fendler's Journey to Santa Fè, 44.
Ficuum Species Nigritianæ, by Prof. Miquel, 563.
——— Prodromus, by Prof. Miquel, 64, 109, 221, 425, 451.
Fumaria, on a new, by W. Mitten, 556.
Fungi, Decades of, by Rev. M. J. Berkeley, 572.

Gardner, G., Esq., Flora of Brazil, 78, 286, 395.
Guiana, Contributions to the Flora of, by G. Bentham, Esq., 116.

Hance, H. C., his Mosses from China,
——— on some new Chinese Plants, 471.
Harvey, Dr. W. H., on a new British Saxifrage, 569.
——— Professor of Botany in the Dublin Institution, 163.
Hemp, manufacture of, at Manilla, 268.
Heward, R., remarks on Dr. Leichardt's Australian journey, 322.
Hilaire, A. de St. on the Patchouly plant, 385.
Hooker, Sir Wm., on Anemia Seemanni, 564.
——————— on a new Pentagonia, 566.
——————— on Ranunculus Javanicus, 565.
——————— on a new Sonerila, 672.
——— Dr., Botanical Mission to India, 237, 297.

Indian News, extract from, 537,

Jameson, his Mosses and Hepaticæ from Pichincha, 187, 278.

Leguminosæ, Enumeration of, by G. Bentham, 580.
Le Jolis, on a New Zealand Flax, 533.
Lineæ, Dr. Planchon on, 165, 473, 507.

Miers, J., Esq., Contributions to South American Botany, 17, 57, 333.
Miquel, Prof., Ficuum Sp. Nigritianæ, 563.
——————Prodromus Monographiæ Ficuum, 64, 109, 221, 425, 451.
Mitten, W., on some plants new to the British Flora, 528.
——— on a new species of Fumaria, 556.

Moquin-Tandon, A., and P. B. Webb, on the structure of Cruciferous flowers, 1.
Mosses (Chinese), described by Wilson, 273.
——— (Australian), three new, by W. Wilson, 26.
Musa Textilis; manufacture of Hemp, by T. M'Micking, 268.
Musci, new, collected by Jameson, described by Dr. Taylor, 187, 278.

Nelumbium Jamaicense, 46.
North American Botany, 271.

Patchouly plant, A. de St. Hilaire on the, 385.
Pentagonia, on a species of, by W. J. H., 566.
Phormium, or New Zealand Flax, on a new kind of, by A. Le Jolis, 533,
Planchon, Dr., on Lineæ, 165, 473, 507.
Pyrenees (Spanish), Borgeau's Plants of, 161.

Quito, plants from the Andes of, 385.

Ranunculus Javanicus, Note on, by W. J. H. 565.
Salway, Rev. T., on Confervæ ægagropila, 213.
Santa Fè, Fendler's Journey to, 44.
Saxifrage, on a new British, by Dr. W. H. Harvey, 569.
Scinde Botany, 539.
Sendtner's Botanical Journey to Bosnia, 42.
Simpson, Sir G., Brief notices of plants, 216.
Stocks, Dr. J. E., Botanical excursion to Shah Bilawul, 550.
——— on the economic Botany of Scinde, 539.
Swan River, plants from the, 385.

Taylor, Dr. Thomas, characters of new Cryptogamiæ, collected on Pichincha, 187, 278.
——— Death of, 162.
——— herbarium of, on sale, 385, 445.
Thibetian Barley, 215.
Thomson, Dr. T., Scientific Mission to Thibet, 28, 97, 200, 657.

United States, Notes on the Botany, Weather, &c., by Dr. W. A. Bromfield, 135, 206, 370.

Wilson, Wm., Esq., on three new Australian Mosses, 26.
——— brief characters of Aulacopilum, 90.
——— Further remarks on the pollen collectors of Campanula, 92.
——— Mosses collected in China by Anderson, 273.
Webb, P. Barker and A. Moquin-Tandon, on the structure of Cruciferous flowers, 1.

Reviews and Notices of Books.

Botanische Bemerkungen, by Presl, 103.

Darlington, Dr. Agricultural Botany, 53.
De Candolle, A.: Prodromus Syst. Nat. Veg., 46.
De Vriese (W. H,); Descriptions des Plantes Nouvelles, &c., des Pays Bas, 559.
Dunal, Petit Bouquet Mediterranéen, 108.

Emerson, G. B.; Report on trees, &c., of Massachusetts, 560.

Gasparrini; Richerchi sulla natura del Caprifici e del Fici, &c., 164.
Gardiner; Flora of Forfarshire, 387.
Genera Floræ Americæ Boreali-orientalis illustrata, by Sprague and Gray, 389.
Geneva. Notices sur les Plantes rares cultivées dans le Jardin Bot. de Genève; by A. P. and A. De Candolle, 107.
Gray; Botany of the United States, 388.
Griffith, W., Posthumous papers of, 446,

Harvey, Dr. W. H.; Nereis Australis, 49.
Hepaticæ Britannicæ; by W. Graham M'Ivor, 55.
Hepaticarum Synopsis; by Gottsche, Lindenberg, and Nees ab Esenbeck, 106.
Hoffmeister; Travels in Ceylon and India, 393.
Hooker, Dr. J. D., Flora Antarctica, 52.

Iconographia Familiarum Nat. Reg. Veg., by Schnizlein, 107.

Johnson; Opuscula Omnia, ed. J. S. Ralph, 272.
Journal of the Indian Archipelago and Eastern Asia, 218.

Labels (Botanical) for Herbaria, 105.
Leyden. Descriptions, &c., des plantes nouvelles du Jard. Bot., by W. A. De Vriese, 220.

Miquel, Professor; Revisio critica Casuarinarum, 562.
Mitchell, Lieut. Col. Sir F. L., Journey into the interior of Australia, 450.

Nederlandsch Kruidhundig Archiff, by de Vriese, Dozy, and Molkenboer, 386.
Nuttall's Description of plants of Rocky Mountains and Upper California, 391.

Pappe, Dr. L., List of S. African Plants, used as remedies by the colonists, 561.
Plantæ Preissianæ, s. Enumeratio Plantarum quas collegit L. Preiss; ed. Chr. Lehmann, 559.
Pritzel, A. G., Thesaurus Literaturæ Botanicæ, &c., 559.

Ralfs; British Desmidieæ, 392, 501.

Sap, Experimental Inquiry into the cause of the Ascent and Descent of; by G. Rainey, 54.
Schomburgk, Sir R., Hist. of Barbados, 47.

Trautvetter, Dr. E. R., Plantarum imagines Floram Rossicam illustrantes, 559.
Tuckerman, Ed.; Lichens of N. America, 561.
——— Synopsis of the Lichens of the N. United States and British America, 389.

A.
1.
2.
3.
4.
5.
6.
7.
8.
9.
B.
1
2.
3.
4.
5
6.
7.
8.
C.
1.
2.
3.
4.
6
7.
8
9.
10.
11.

Phascum Drummondi.

Splachnum Gunnii.

Orthotrichum Tasmanicum

Fitch del. et lith.

Reeve Benham & Reeve imp

a.
A.
b.
c.
d.
e.
a.
b.
c.
d.
e.
g.
h
i
f.
B.

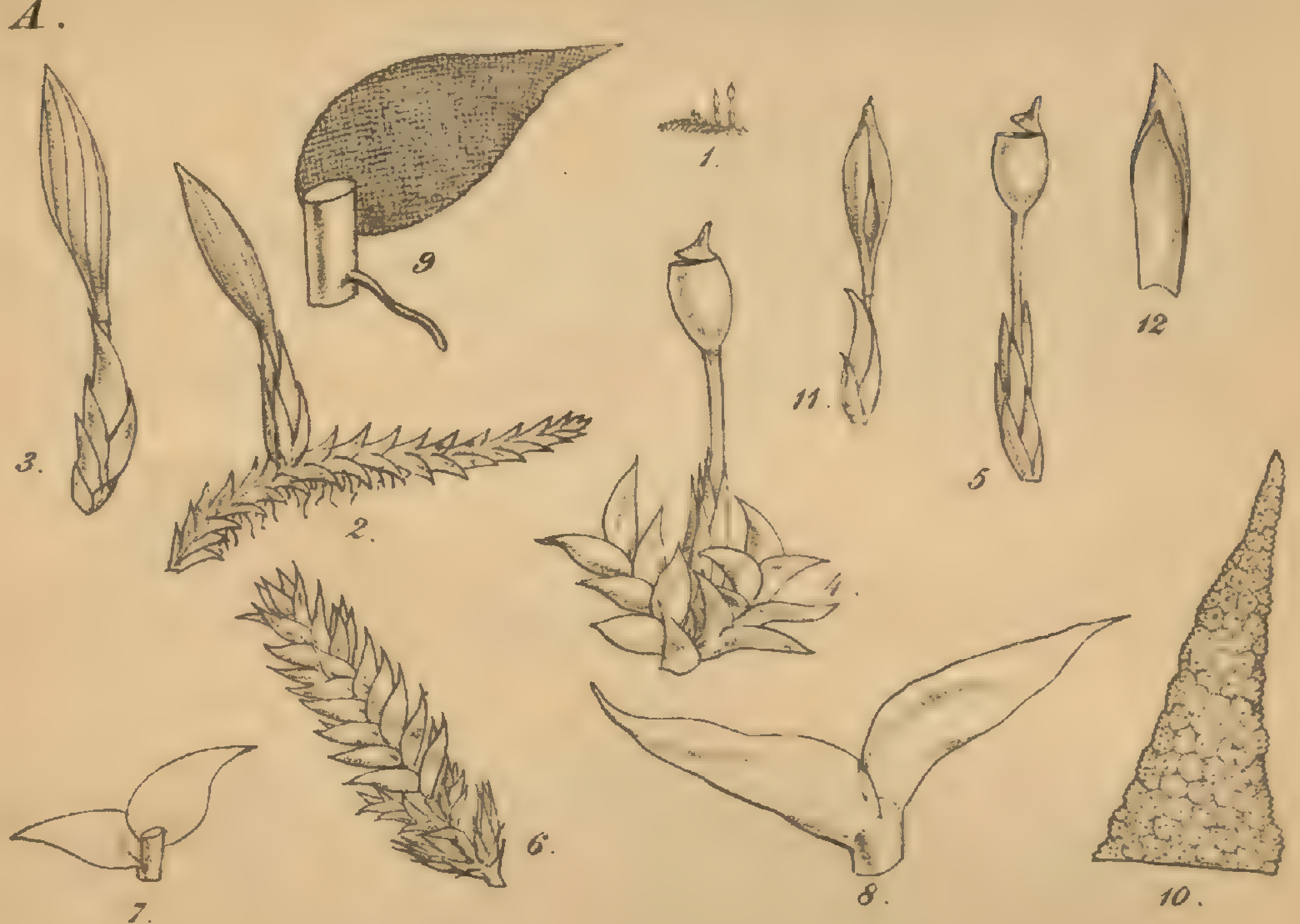
[illegible]

[illegible]

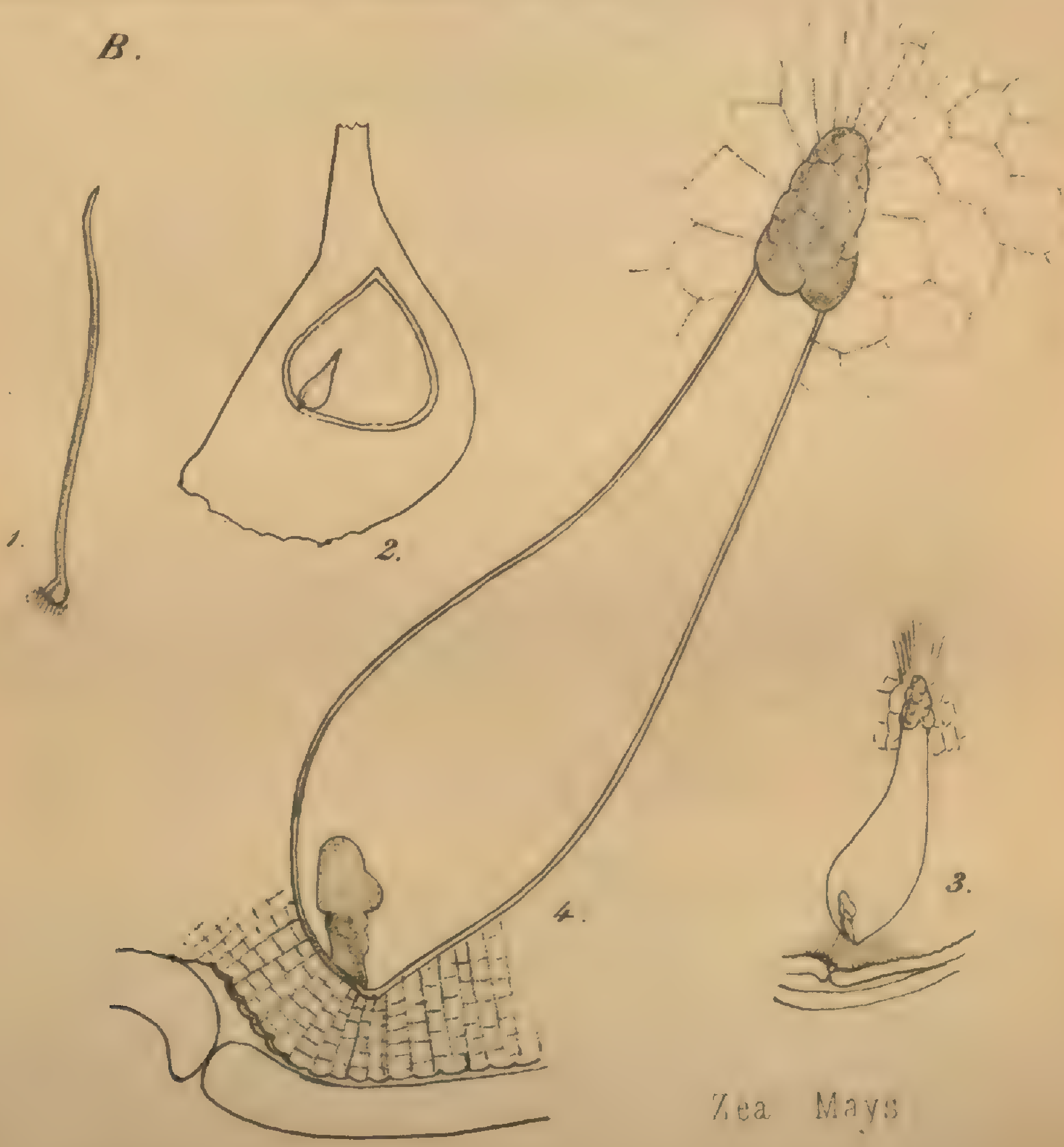
Sycomorus panifica.

b.
c.
f.
e.
d.
a.
A.
a.
c.
B.
b.

Sycomorus Capensis.


A.
1.
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.

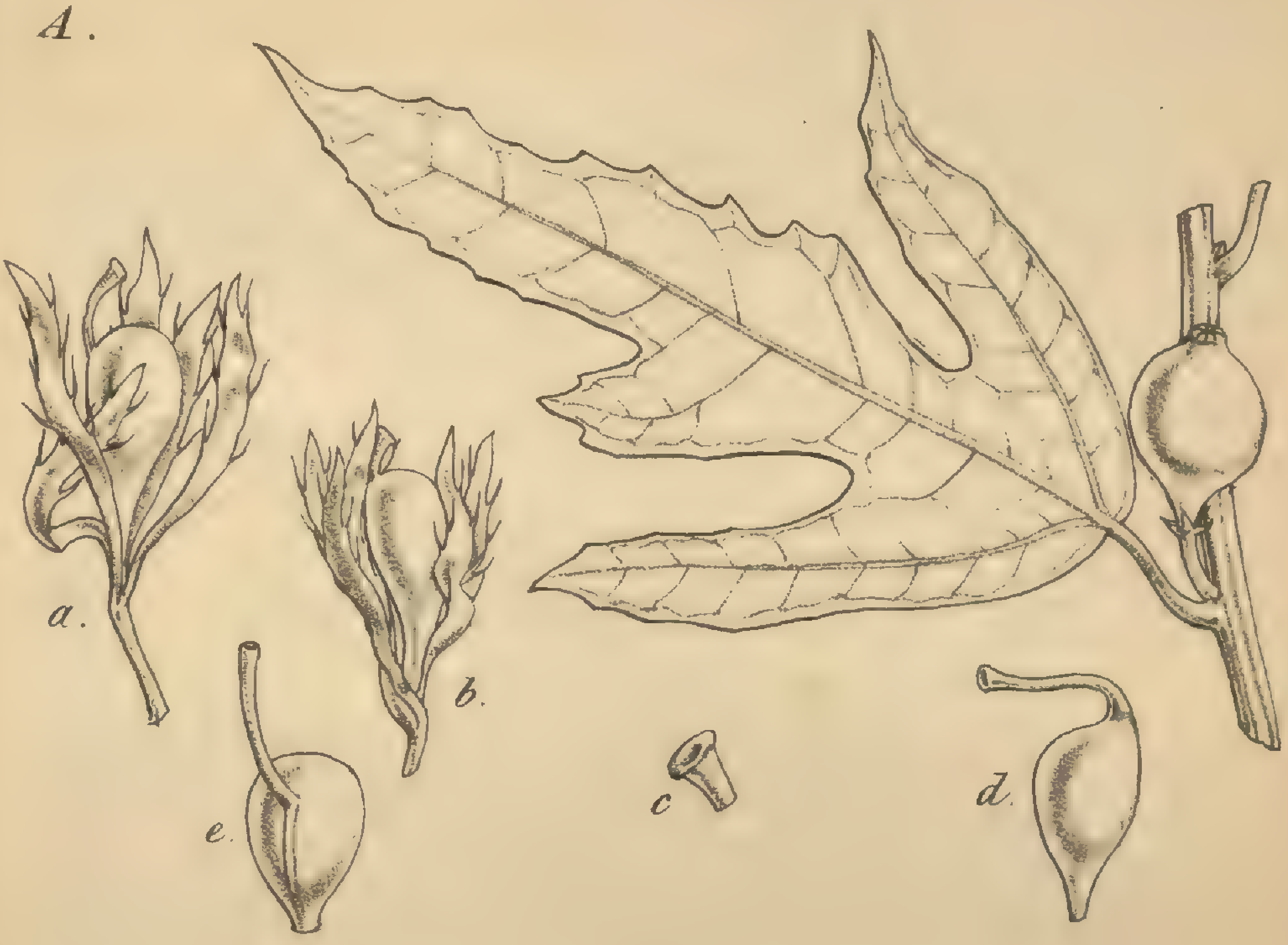
Aulacopilum glaucum.



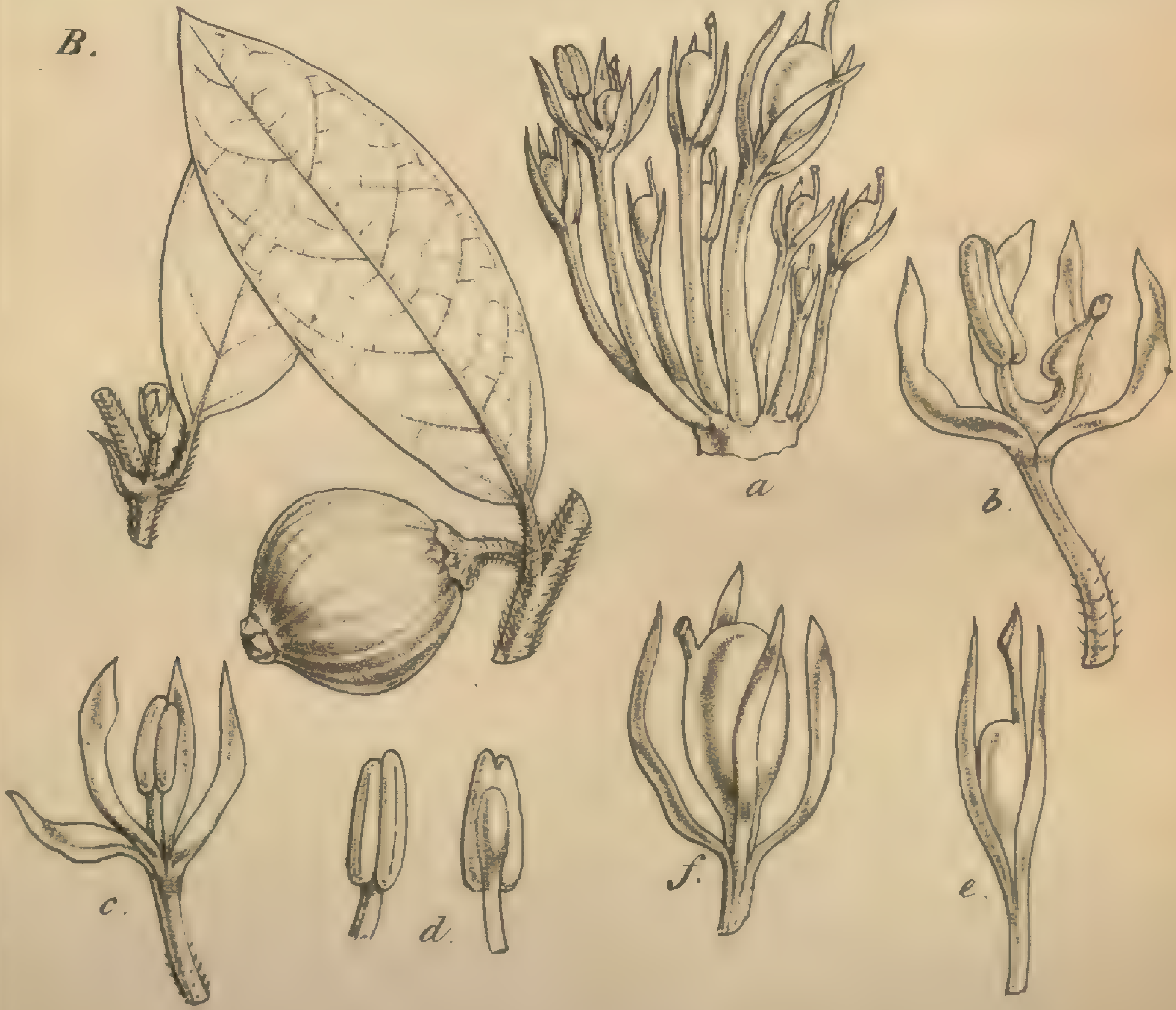
Zea Mays

Fitch del et lith.

Reeve Benham & Reeve imp



Ficus acutiloba, *Miq.*



F. antithetophylla, *Stend.*

Fitch del. et lith.

Reeve Benham & Reeve imp.

A.
a
b
c
d
e
f
g
h
i
k
B.
a
b
c
d
e
f

Ficus pyriformis, *H. & A.*

F. tinctoria, *Forst*

Fitch del. et lith.
Reeve, Benham & Reeve imp.

A.
a
b
c
d
e.
B.
a
b
c
e.
d

Ficus pedunculosa.

Covellia Barclayana. *Mig*

Fitch del et lith

Reeve Benham & Reeve imp

A.
a
b
c.
d.
e.
B.
b
a
c

Covellia volkameriæfolia, *Miq.*

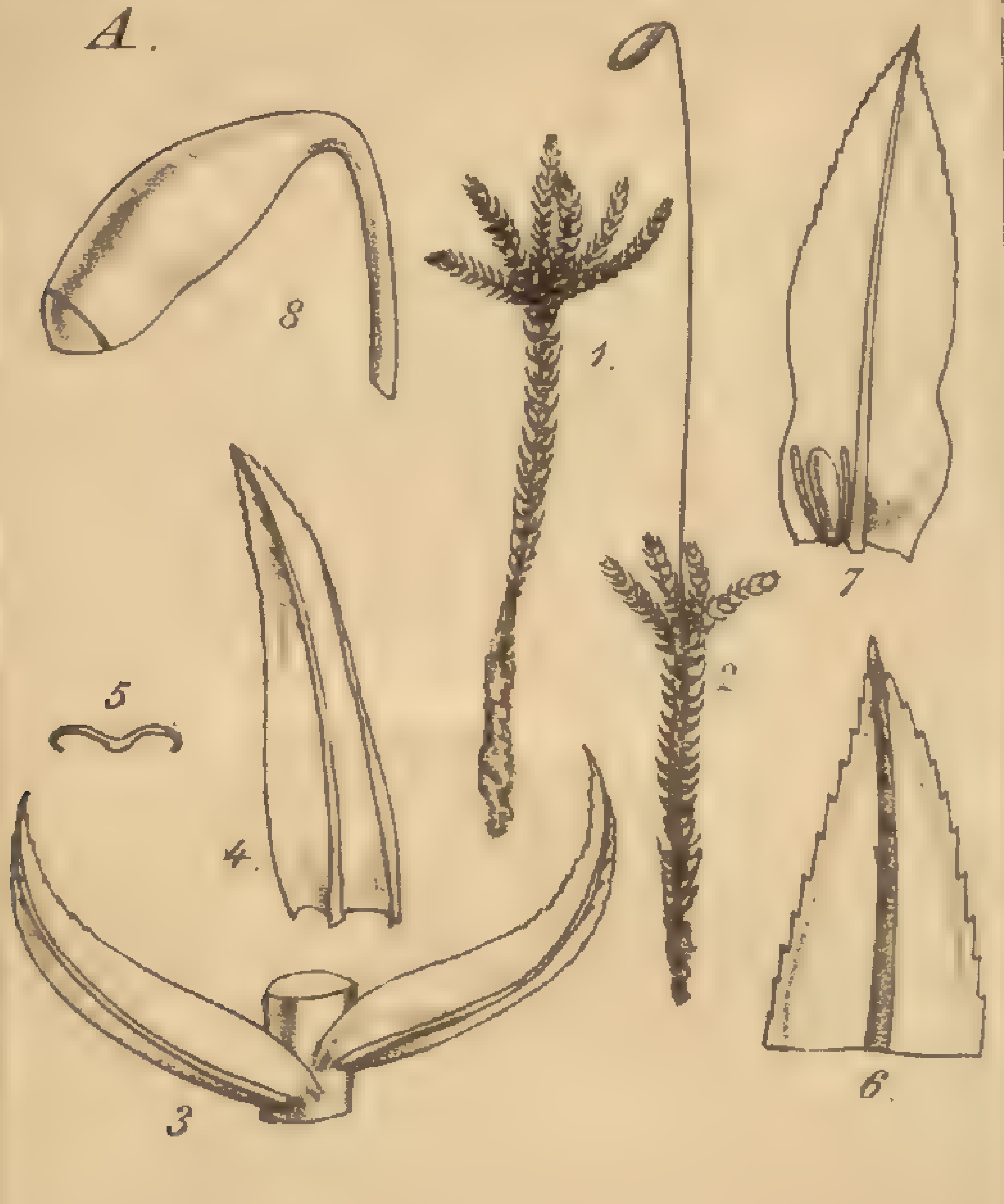
Covellia cuneata. *Miq*

Reeve Benham & Reeve imp

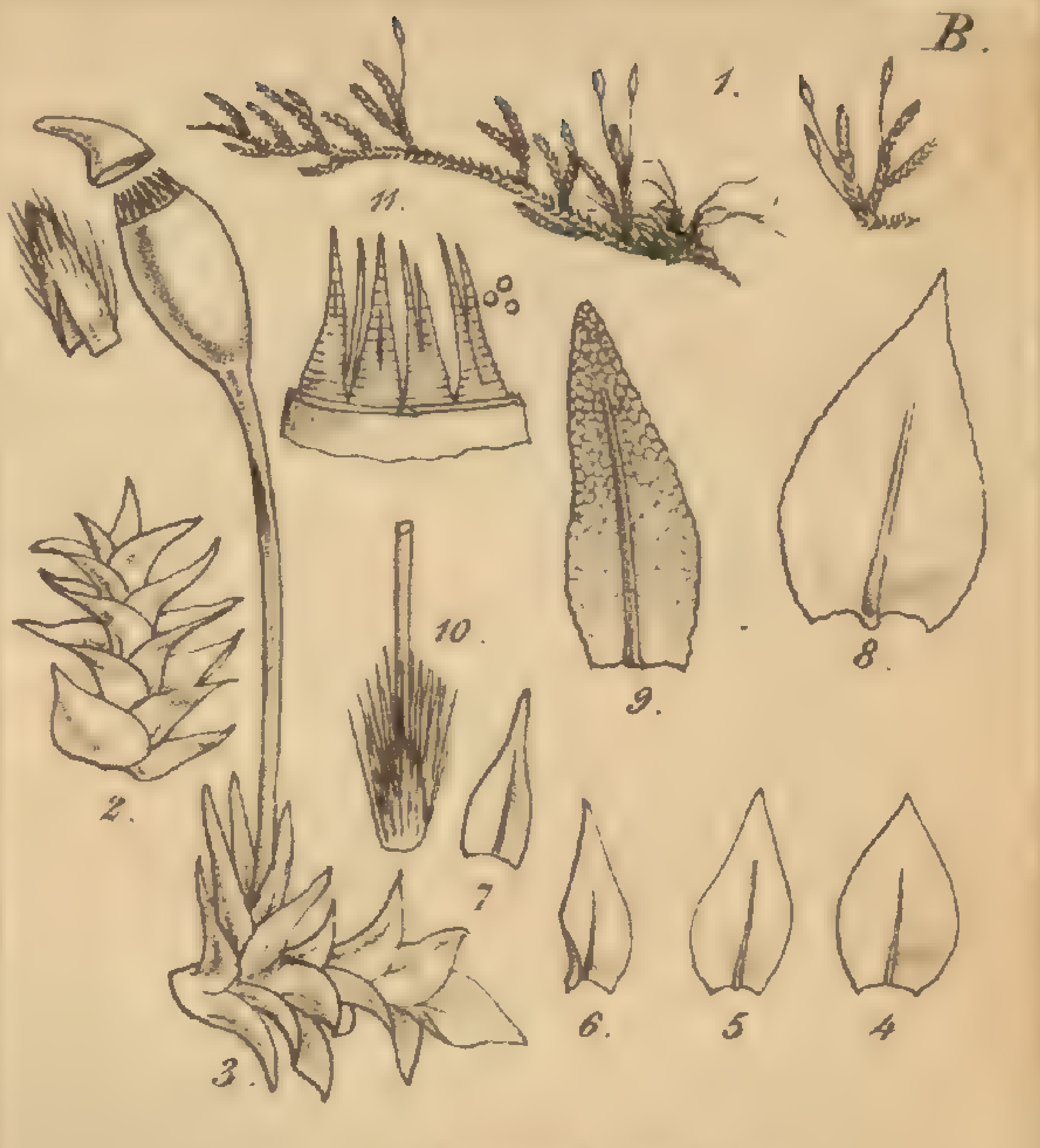
Syn. diversifolia. *Miq*

Covellia microcarpa *Miq*

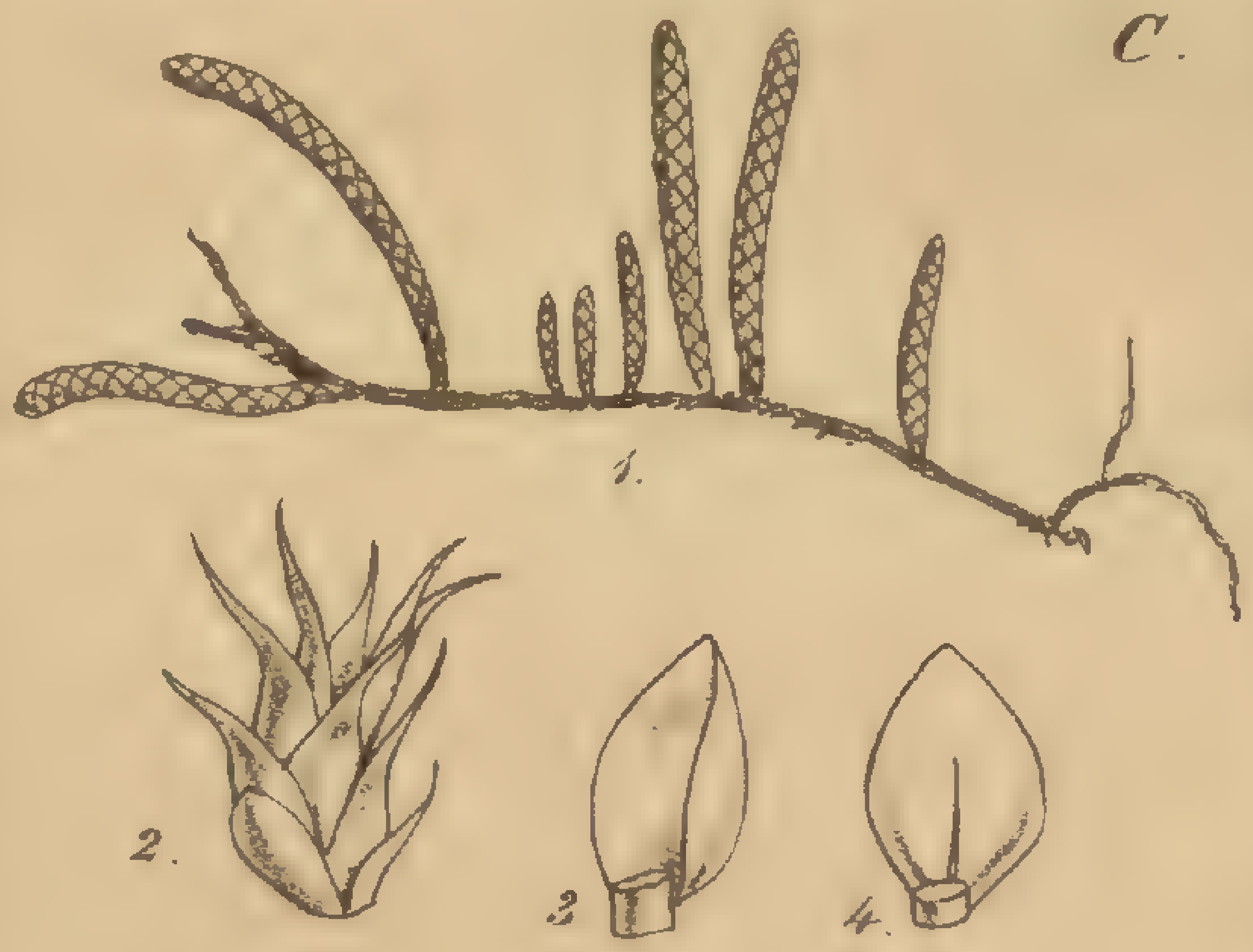
Reeve Benham & Reeve imp



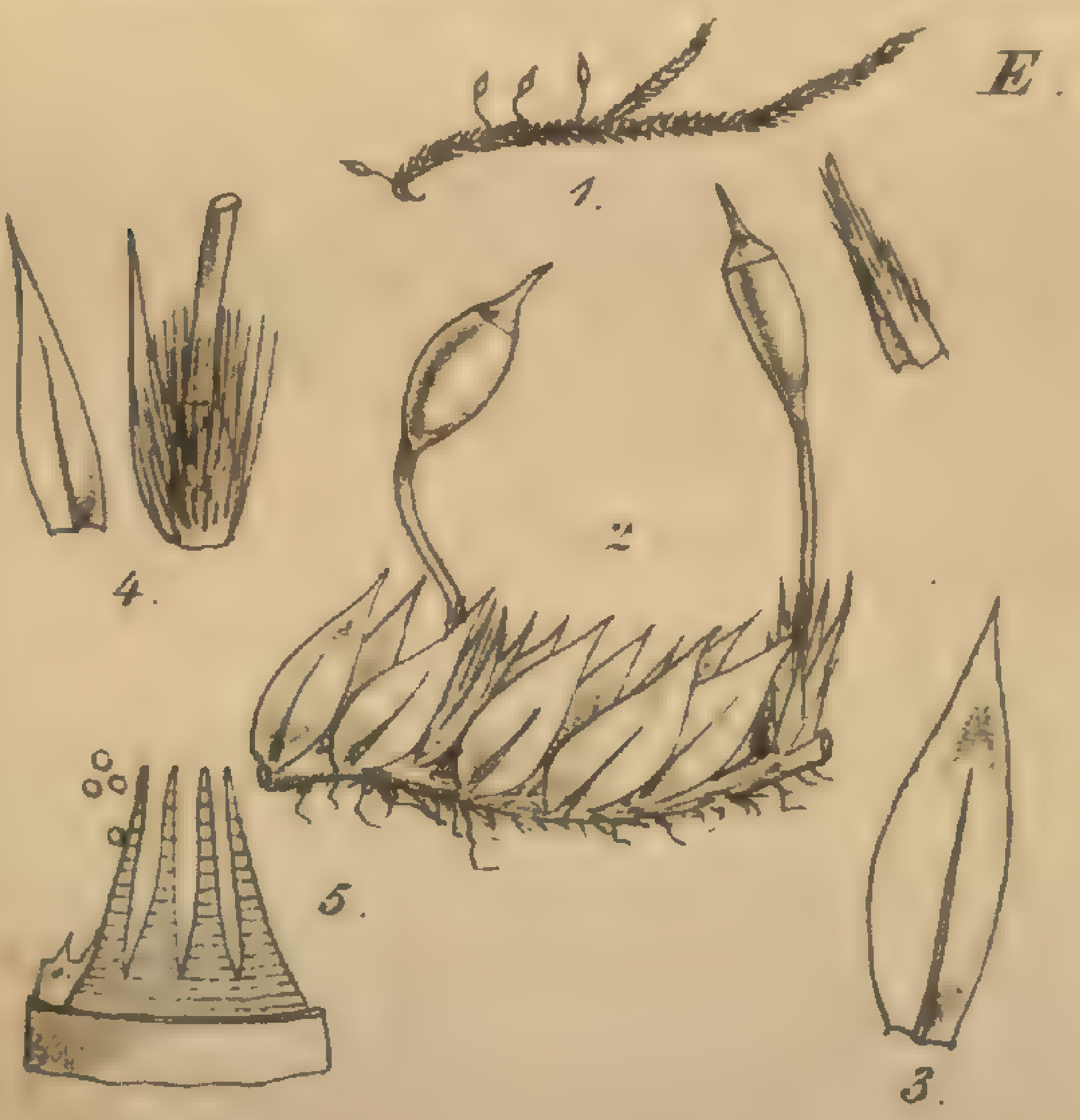
Mnium radiatum.


B.
1.
11.
2.
10.
9.
8.
7
6.
5
4
3.

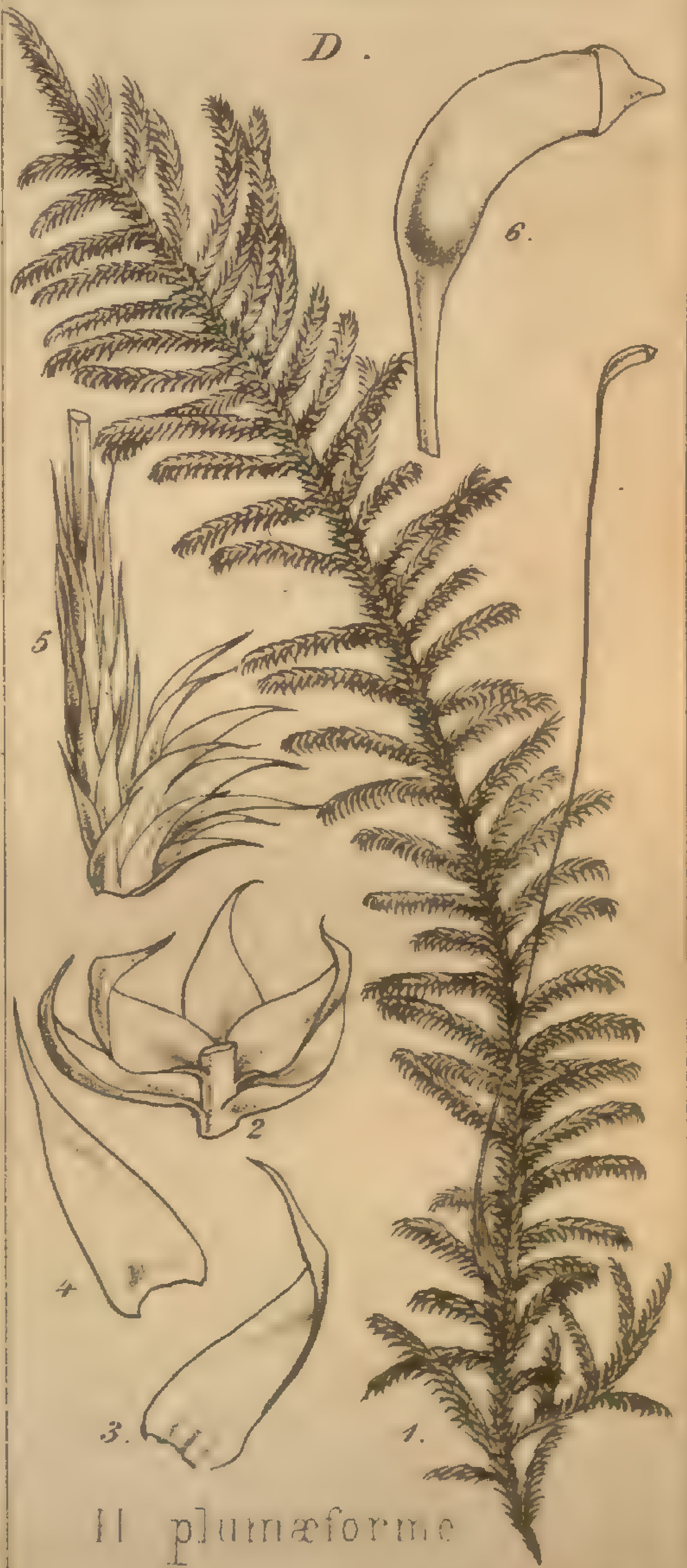
Anomodon fragilis.



Hypnum concinnum.



Pterogonium laxum.



H plumæforme

Synœcia falcata. Miq

Reeve Benham & Reeve imp

Urostigma Vogelii.

U. rubicundum.

Q. M. R. Ver Huell, del.

Reeve Benham & Reeve imp.

A.
Urostigma elegans
B.
U. ottoniæfolium
C.
a.
b.
c.
d.
a
U. Thonningii.

Q. M. R. Ver Huell, del.
Reeve Benham & Reeve imp.

S. Thonningiana.
a.
A.
b.
B.
Sycamorus Guineensis.
C.
a
b.
c
d
Ficus exasperata

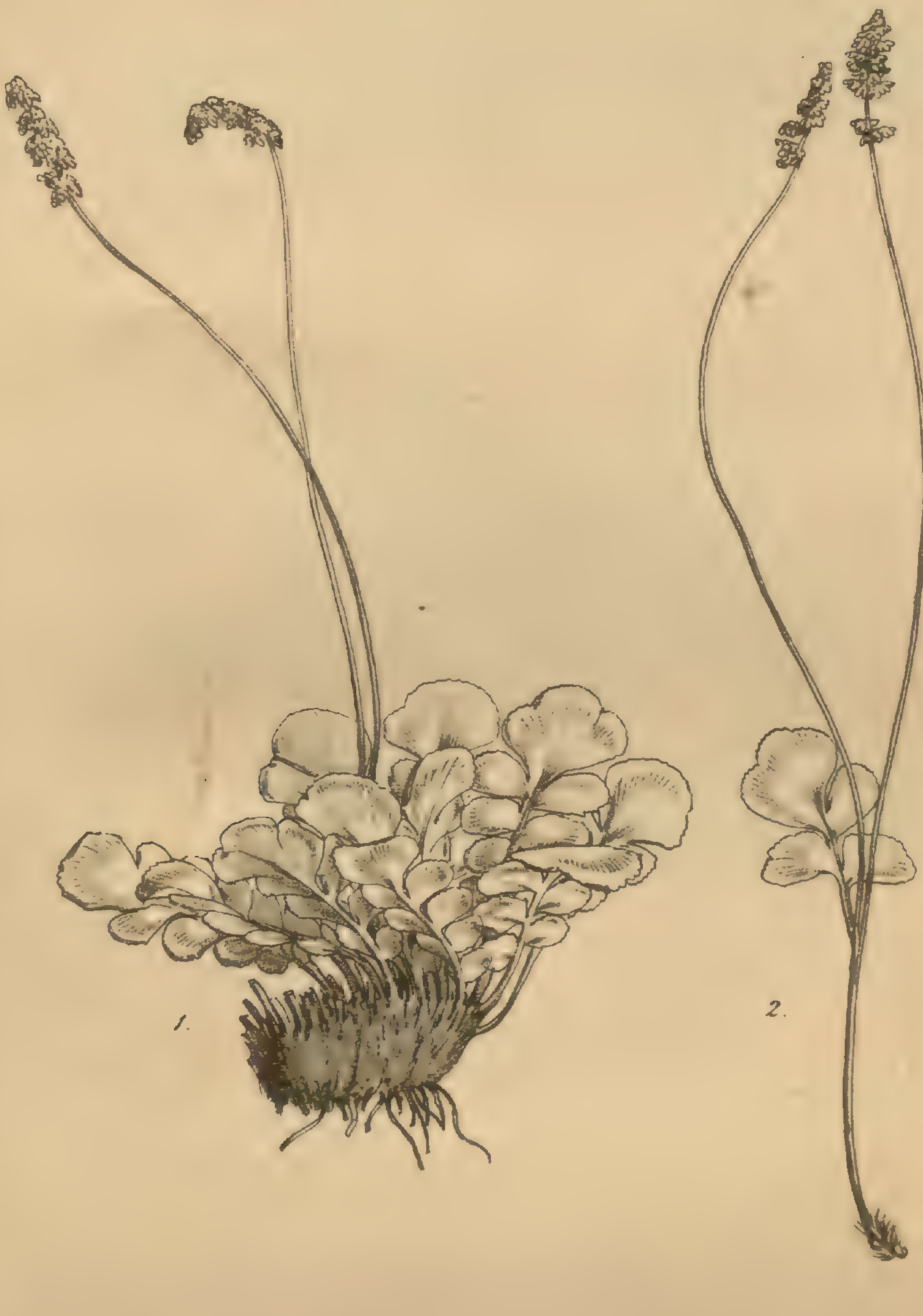
J. M. K. Ver Huell del. [illegible]

Ficus ludens.

F. asperifolia.

Q. M. R. Ver Huell del.

Reeve, Benham & Reeve imp.



Anemia Seemanni.

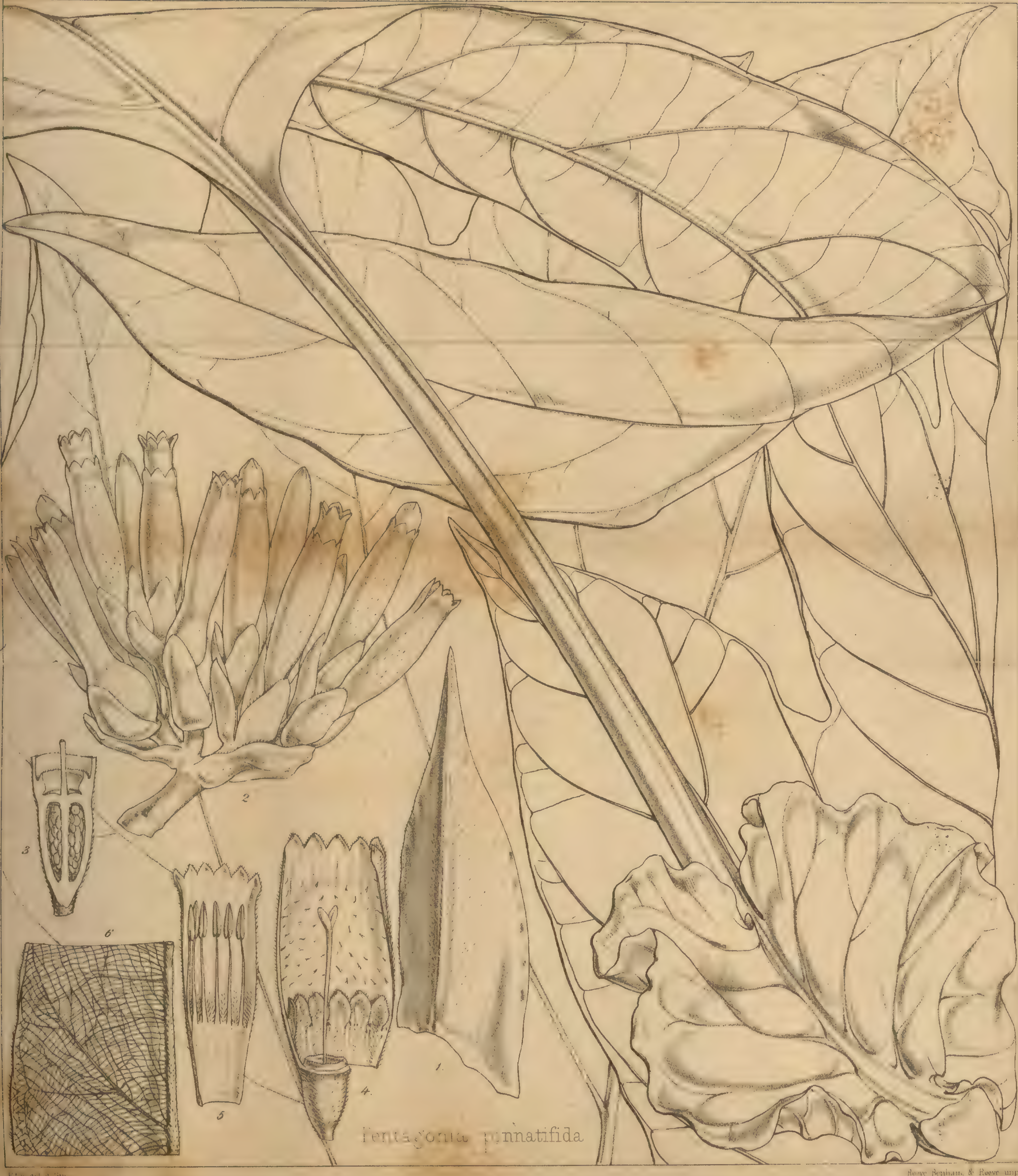
Fitch del et lith

Reeve Benham & Reeve imp.

Ranunculus Javanus

Fitch del. et lith.

Reeve, Benham & Reeve imp.



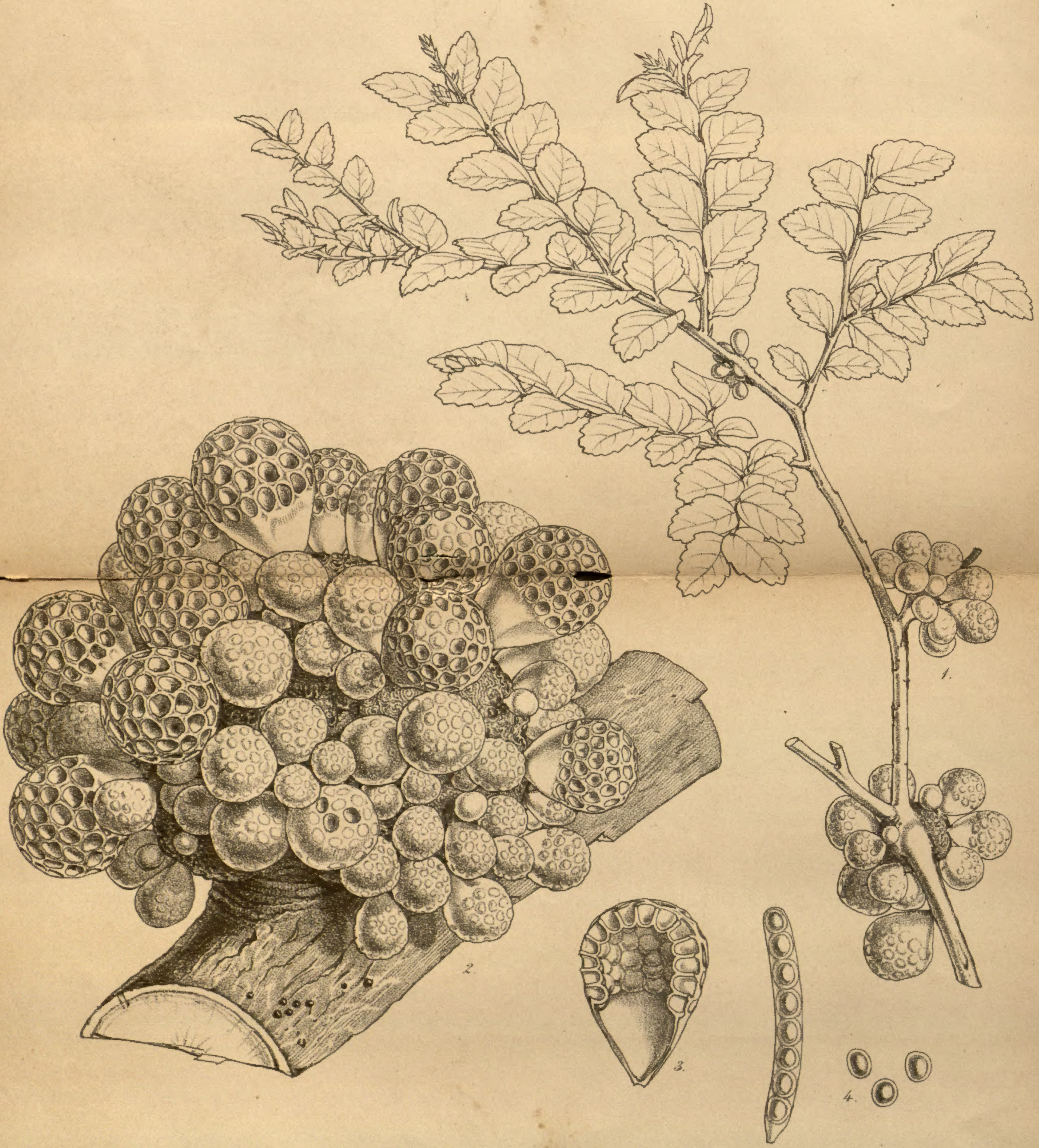
Pentagonia pinnatifida

[illegible] del et lith

Reeve Benham & Reeve imp

Saxifraga Andrewsii, *Harv.*

Fitch del et lith.
Reeve, Benham & Reeve, imp.



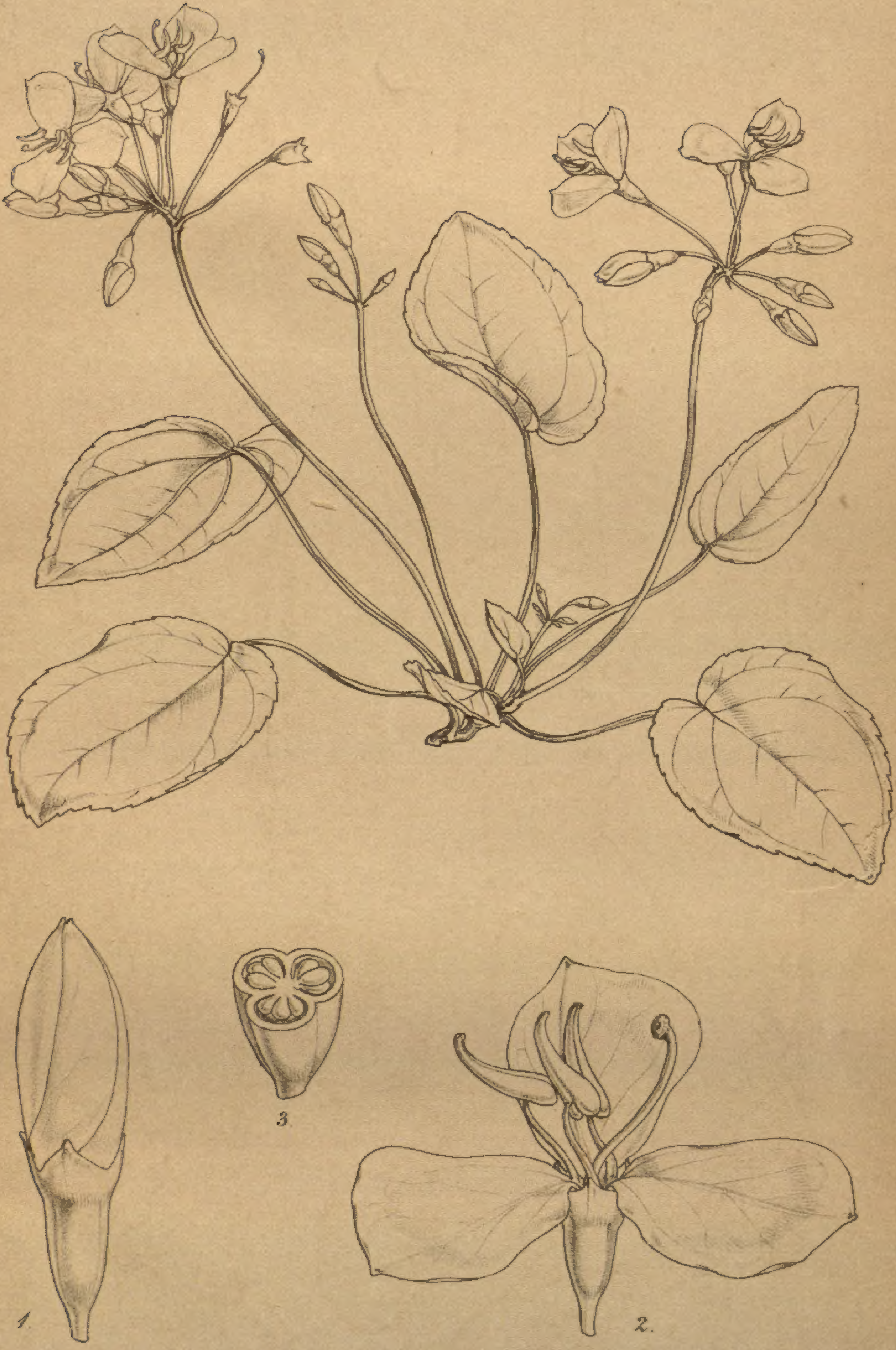
Cyttaria Gunnii, *Berk.*

Fitch del et lith.

Reeve, Benham & Reeve, imp.

Sphæria Gunnii, *Berk.*

Reeve, Benham & Reeve imp.



Fitch del et lith.
Reeve, Benham & Reeve, imp.